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ABSTRACT

In 1991, Michigan's Technical Planning Subgroup of the Resource Group on National Education Goal 2 (high school completion) recommended the development of a voluntary state/local student record system and compilation of a compendium of current state practices and current plans for state/local system development. Governor Carroll Campbell, Jr. instructed panel staff to commission a report on the current status and future trends in statewide student record systems. In response, the Goals Panel staff and consultants carried out two 1992 data collection activities, surveyed current student record systems in the states, and conducted indepth interviews with knowledgeable officials in 11 states. National survey results showed that only 7 out of 47 states responding reported existence of a comprehensive state-level student record system; 29 are considering implementing one. Interview results regarding initiation, content, and outcomes of state-level systems are also summarized. Although many states are making progress, the pace of system development is relatively slow in the nation as a whole. State data needs, resources, traditions, and legislative mandates differ substantially. Generating the resources and political will to provide technical assistance to individual states is essential. Appendices contain descriptions of state systems, a student questionnaire, interview protocol, a summary of matrices in the student questionnaire, and 4 figures. (MLH)

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STATEWIDE STUDENT RECORD SYSTEMS:

CURRENT STATUS AND FUTURE TRENDS

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STATEWIDE STUDENT RECORD SYSTEMS: CURRENT STATUS AND FUTURE TRENDS

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Final Draft
Revised 3/26/92

Paper prepared for the National Educational Goals Panel. The views and opinions expressed herein are solely those of the author, and no official endorsement should be inferred. I am grateful to Oona Cheung, Barbara Clements and Tom Tobin of the Council of Chief State School Officers and Leslie Lawrence of the National Education Goals Panel staff for their invaluable assistance with this project. My thanks also to Anna Neumann, Marty Orland, and the members of the Resource Group for Goal 2 for their helpful comments on various drafts of this manuscript.

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STATEWIDE STUDENT RECORD SYSTEMS: CURRENT STATUS AND FUTURE TRENDS

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EXECUTIVE SUMMARY

Introduction

- The Technical Planning Subgroup of the Resource Group on National Education Goal 2 recommended the development of a voluntary state/local student record system to measure progress toward Goal 2.
- The Technical Planning Subgroup recommended that a compendium of current state practices and current plans for system development at the State and local level be compiled.
- Governor Carroll Campbell, Jr., Chair of the National Education Goals Panel, instructed the Panel staff to commission a report on the current status and future trends in statewide student record systems.

Method and Design

- Goals Panel staff and consultants, in conjunction with staff of the Council of Chief State School Officers, carried out two data collection activities in January and February of 1992.
- Staff and consultants prepared a brief survey on current student record systems that was sent to officials in State Education Agencies in all 50 States; 47 States, or 94%, responded.
- Staff and consultants conducted in-depth interviews with knowledgeable officials in eleven States regarding the current status, history, and future plans for the State's student record systems.

Findings from the National Survey

- Seven out of 47 States responding, or 15% of the States, reported that they currently have a comprehensive state-level student record system.
- Of the 40 States which currently do not have a comprehensive state-level student record system, 29, or 73%, are considering implementing such a system.
- All told, 36, or 76%, of the 47 States responding indicated that they currently have or are considering implementing a comprehensive state-level student record system.
- Among the 40 States without a comprehensive student record system, many maintained one or more student record subsystems at the State level.
- Only 30% of the States without a comprehensive student record system maintains a dropout subsystem, and fewer than one in four has a graduate/completer subsystem.
- Relatively few of the States without a comprehensive student record system have subsystems on specific topics that can be linked.

Findings from the In-Depth Interviews

Initiation

- Systems that involve reorganizing and reformatting data that are already being collected are easier to implement than those that involve new data collections at the local level.
- A State's previous history with student record systems -- especially the pre-existing use of technology -- influences the process of system development.
- State legislation requiring specific data reporting is frequently used to justify and drive student record system development.
- The need to race to meet deadlines for system implementation can lead to inadequate planning and staff training.
- States rarely have sufficient time or resources to train local staff in how to implement new systems.
- Data confidentiality, privacy and security are recurring issues in the development of statewide student record systems.
- The opposition of local districts to statewide student record systems frequently stems from a concern that the data will be used by the State for inappropriate accountability purposes, and thereby jeopardize local autonomy.

- There is a substantial variation across states in the extent to which the development of statewide student record systems has been supported by new financial or staff resources.

- Successful systems gain the early support of program staff as well as MIS and data processing staff.

- The critical step in system design in most States is the development of a data "dictionary" or handbook specifying clear definitions of data elements and formats that can be consistently applied across local districts.

- Many States attempt to give local districts a sense of ownership of the system by giving district representatives joint responsibility for determining the definition of data elements and system design.

- Few States bring all districts and all data elements on line at once; rather, the process typically is incremental, adding districts and/or data subsystems over time.

Content

- Data needs at the State level are largely determined by State and Federal reporting requirements.

- The perceived need for various types of data differs substantially from one State to the next.

- The size of the State -- the numbers of students and school districts in its borders -- strongly influences how statewide student record systems are organized.

- In some States, the student record system is part of an integrated management system; in such cases, it does not make sense to consider student records independent of staff or financial information.

- Relatively few States rely on a single software/hardware configuration at the district level; but those states with regional processing centers are likely to use standardized systems at these regional sites.

- An identification number that uniquely identifies each child in a State is an essential aspect of a student-level record system.

Outcomes

- The implementation of comprehensive student record systems in those States that currently have them is so recent that few States have had the opportunity to fully exploit the potential of these systems to inform state-level educational policy.

- Local school districts do not use State systems extensively, especially small districts that lack large research and evaluation staffs.

Conclusions

- Many States are making progress toward implementing statewide student record systems that could provide more accurate information on high school completion and school dropout rates.
- The pace of system development, while quite rapid in some States, is relatively slow for the Nation as a whole.
- Data needs, resources, traditions, and legislative mandates differ substantially from one State to the next.
- For this reason, the development of prototype comprehensive statewide student record systems may not be as useful as the provision of technical assistance to individual States.
- While technical assistance is an important step in the process of system development, generating the resources and political will needed to make progress are equally important.

STATEWIDE STUDENT RECORD SYSTEMS: CURRENT STATUS AND FUTURE TRENDS

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INTRODUCTION

In September 1991, the Resource Group on National Education Goal 2, High School Completion, transmitted the report of the Technical Planning Subgroup on long-term strategies for measuring progress toward Goal 2 to the National Education Goals Panel. The Technical Planning Subgroup had proposed the development of a Voluntary State/Local Student Record System (VS/LSRS) involving standardized definitions of data elements and reporting formats at the local level. With such a system in place, appropriate statistical summaries on dropouts and graduates (as well as other aspects of student characteristics, experiences, and performance) could be generated in a reliable and consistent way at the State level.

The Technical Planning Subgroup on long-term strategies for measuring progress toward Goal 2 recommended that the following steps be taken to develop the VS/LSRS:

1) that a compendium of current state practices and current plans for system development at the State and local level be compiled,

2) that a national panel of experts on information system design be convened,

3) that the National Center for Education Statistics (NCES) and the Council of Chief State School Officers (CCSSO) convene a national task force on data elements,

4) that NCES take the lead in developing prototype systems for the collection and maintenance of student records,

5) that technical assistance in system design and implementation be provided to States and school districts, and

6) that seed money be provided to States to aid in the development of the VS/LSRS.

In September of 1991, Governor Carroll Campbell, Jr. of South Carolina, Chair of the National Education Goals Panel, instructed the Panel staff to commission a report on the current status and future trends in statewide student record systems. This report was prepared pursuant to Governor Campbell's request. It gives particular attention to the status of system development in selected States and to the dynamics of initiating the systems in those States.

To foreshadow some of the results that follow, we found that the process of initiating statewide student record systems is fraught with difficulties, including insufficient resources; inadequate knowledge; questions about the need for a system or the need for particular data; and questions of trust, including

concerns about diminishing local autonomy. While system design and content are prominent issues, concerns about strategies for and obstacles to "getting a system off the ground" are paramount, particularly in States currently engaged in the earliest stages of system design and implementation. Given the early stages of system development in most States, outcomes are tentative and difficult to identify at this time.

This report is divided into five parts: (1) introduction, including background and purpose, (2) method and design of the report, including research strategy and planned organization of the report, (3) findings emerging from the survey, (4) findings emerging from the interviews, and (5) conclusions.

METHOD AND DESIGN OF THE REPORT

During January and February 1992, Goals Panel consultants and staff, in conjunction with staff of the CCSSO, carried out two key data collection activities to expand understanding of the use of student records systems at the State level. These efforts involved a national survey of State departments of education regarding their current student record systems, and in-depth interviews with staff in eleven states that have already implemented or are planning to implement statewide student record systems.

The survey. A brief survey was sent to State Education Department Officials in the 50 States, yielding 47 responses (94% response rate). The survey, which was descriptive in nature, focused on how a State organizes information about students, including what kinds of student information are gathered, who has access to information in the system, where information is stored, the level of data aggregation, and the level of data integration (the extent to which data may be linked). A copy of the survey is appended to this report as Appendix B.

The interviews. Intensive interviews, concerning the nature of a State's information system and its history, were conducted for eleven states with persons deemed knowledgeable about their State's particular system. Interviewers were guided by a common semi-structured interview protocol that addressed the following topics: current status of the system, history of the system, key personnel in system development and operation, future plans for the system, lessons learned, assessment of strengths and weaknesses of the state system, and cost factors. This draft report is based on ten of those eleven interviews; one case remains only partially complete. A copy of the interview protocol is appended to this report as Appendix C.

As the third section of this report shows, the survey yielded a national profile of progress in the development of statewide student information systems or of intent to engage in the development of student information systems. The survey also provides an overview of "subsystems" currently in operation, even in states without an overall system in place (or contemplating one), and of their integrative capabilities (current).

The fourth section reports on the results of the interviews in three parts:

(a) System initiation, including the State's readiness for change, and change strategy (incentives, obstacles, and process)

(b) System content, including the determinants of system content and operational features

(c) Outcomes

It is important to note that these categories emerged through an analysis of the interview data.

Appendix A of this report presents a State-by-State summary of system development, status, composition, and problems for ten State student record systems. These summaries were derived from transcriptions of telephone interviews and notes from face-to-face and telephone interviews, as well as from supporting documentation where available. The interviewees, who were promised anonymity, were invited to comment on and/or amend these State situation summaries.

FINDINGS FROM THE NATIONAL SURVEY

General progress in system development

A student record system, as defined in the survey fielded by the CCSSO, is a data collection system that has as its primary unit of input an individual student. For example, a collection of data that contains records on individual students (e.g., John Doe, 577-24-9384, 1/1/1976, male, white) is a student record system. But a collection of data that summarizes the experiences or characteristics of groups of students in a way that does not permit describing individual students is not a student record system, according to this definition. For example, a data collection that reports the number of students in each grade in a school who are members of a particular racial or ethnic group is not a student record system because the primary unit of input is the school, not the individual student. It would not be possible to characterize any particular individual student on the basis of a school-level data collection. Conversely, a student record system containing information about the grade level and racial/ethnic group membership of individual students *would* be able to generate the number of students in each grade who are members of various racial/ethnic groups. In a student record system, the information characterizes attributes of individual students, and data remain available for individual students.

Figure 1 reports on the current status of State-level student record systems. The left part of this figure shows the number and proportion of States reporting that they have a comprehensive State-level student record system which includes all students in the State and contains various descriptive data elements for individual students. Seven out of 47 States responding, or 15% of the States, reported that they currently have a comprehensive State-level student record system. The remaining 40 States, comprising 85% of the respondents, indicated that they do not have a comprehensive State-level student record system at this time.

Those States that do not currently have a comprehensive State-level student record system were then asked a series of questions about the presence or absence of other State-level student records maintained in each State. These States were asked if there are different subsystems or databases maintaining data on individual students that can be linked together with student identification numbers to enable the separate databases to function like one database. As Figure 1 shows, four of the 40 States without comprehensive State-level student record systems, or 10% of those States, reported that they have such linked subsystems. The remaining 90% of these States do not maintain linked subsystems. Alternatively, some States maintain different State-level student records subsystems that cannot be integrated in any way. Figure 1 also indicates that 22 of the 40 States without comprehensive State-level student record systems, or 55%, have such unlinked subsystems. Nearly as many (45%) States do not maintain State-level student records systems that cannot be linked. The States with linked subsystems and those with unlinked subsystems are not mutually exclusive, as it is possible for a State to have some subsystems that are linked, and others that are not.

While relatively few States currently have comprehensive State-level student record systems, many States are considering the development of such systems. Figure 1 indicates that 29 of the 40 States that currently do not have a comprehensive State-level student record system, or 73%, are considering the development of such a system. Eleven of these 40 States, or 27%, are not currently considering developing a comprehensive State-level student record system. All told, 36, or 76%, of the 47 States responding indicated that they currently have or are considering implementing a comprehensive State-level student record system.

Subsystems currently in place

While the survey indicated that seven of the 47 States responding maintain comprehensive State-level student record systems, it did not reveal what specific types of data were housed in those systems. We learned considerably more about the data maintained on individual students in States without a comprehensive statewide student record system. Figure 2 shows the proportion of such States maintaining independent and non-integrated student record subsystems focused on specific topical areas. These systems include both partial subsystems, in which data are maintained on a particular subset of the student population in the State (e.g., special education students or vocational education students), and complete subsystems, in which data are maintained on every student enrolled in the public schools in the State.

The subsystems are arrayed in Figure 2 from most common to least common. The most common State-level student record subsystem concerns special education. Nearly three-quarters of the States without a comprehensive student record system reported that they had a stand-alone special education subsystem. In most of these States the system was described as partial, indicating that data were maintained solely on those individual students identified as eligible for or receiving special education services.

Figure 2 also documents that while most States identified special education students at the State level, other student record subsystems were much less likely to be present. Only about 40% of the 40 States lacking a comprehensive student record system maintained subsystems covering GED test takers, vocational education, migrant students, and student assessment. As with special education, the subsystems focused on GED test takers, vocational education and migrant students typically were described as partial,

including data just on students participating in those programs. The reports on assessment subsystems were more evenly split, with some States reporting that their State-level data on student assessment were partial, and other States reporting that the data were complete. It is conceivable that some respondents indicated that the assessment data were partial because their States test only students in certain grades, and therefore the assessment data in fact do not pertain to all students enrolled in the schools in the State at a particular point in time.

With regard specifically to data on school dropouts and graduates or completers, 30% of the respondents indicated that their State maintained a stand-alone system on school dropouts, and nearly one-fourth of the respondents noted the existence of a State-level system covering graduates/completers. Data on dropouts were typically reported to be partial. This could reflect the maintenance of data just on dropouts, or it may indicate that States only keep track of the dropout status of students in older grades, e.g., Grades 7-12 or 9-12.

Figure 2 also shows that some States house student record systems focused on other topical areas, including compensatory education/Chapter 1 participation, bilingual/English as a Second Language (ESL) program participation, and eligibility for free or reduced-price school lunches. A small number of those States lacking comprehensive student record systems also contain student record subsystems covering student attendance, transportation, and scheduling information. Appendix D provides greater detail on individual State reports. Readers interested in the existing features in any particular State are advised to consult that State's Department of Education for more information.

The survey results also indicate that States use student record systems for several purposes. For each student record subsystem, and for comprehensive systems as well, the survey inquired about three specific uses, including Federal reporting, program evaluation, and accountability. The survey directions instructed respondents to check the Federal reporting category if the student record system is being maintained primarily as a mechanism for satisfying Federal reporting requirements. The program evaluation category indicated that the student record system is used to assist in evaluating the effectiveness of a particular program (e.g., a vocational education tracking system). The accountability category was defined as those instances where the student record system is used to measure the performance of the education system. The survey also included an "other" category to capture other uses of the system or systems.

The respondents indicated that States use their student record systems extensively for Federal reporting, program evaluation, and accountability purposes. Some subsystems are used more for one purpose rather than another. For example, the special education student record systems were invariably used for Federal reporting purposes, but roughly two-thirds of the States with special education student record systems also used those systems for program evaluation and accountability purposes. Conversely, state assessment systems are much more frequently used for accountability purposes than for Federal reporting purposes.

Many States rely on multiple media (e.g., paper forms, diskettes, magnetic tapes, and telecommunications) to exchange data among sites in the State (e.g., between a local district and the State education department, or between a district and an intermediate agency). States maintaining integrated State-level systems are less likely to rely on paper forms as the primary means for exchanging data. In some States, however, paper forms are the primary medium for transmitting data from local districts to the State education department.

States differ in their structural characteristics, and these structural features may be related to the form of a State's student record system. Figure 3 ranks the 50 States according to the total number of public K–12 students enrolled in the State in 1989. At that time, 11 States had enrollments in excess of one million students, while 11 States had enrollments under 200,000 students. At the extremes, California serves more than 5 million public K–12 students, whereas Vermont, Wyoming and Delaware each serves fewer than 100,000 students; this means that California has more than 50 times the number of students in these three States. This diversity maps onto the ways in which data are maintained in the States. For example, larger States are substantially less likely to rely on paper forms for exchanging data with local districts and intermediate units than are smaller States.

Another structural feature of the States is the average size of their school districts. Some States have large numbers of very small school districts, while others have a small number of very large districts. The range of district sizes is reported in Figure 4. Excluding Hawaii, which has a single school district of approximately 170,000 students, there is widespread variation from one State to the next in the average size of school districts. In Maryland, which has but 24 school districts, the average district enrolls nearly 30,000 students. Four other States have average district sizes in excess of 10,000 students, and a total of 13 States have an average district size of 5,000 students or more. At the smaller end of the distribution, Montana's 549 districts average about 275 students each, and Nebraska, Vermont and North Dakota have school districts which average fewer than 400 students. In all, eight States have school districts that average approximately 1,000 students across the K–12 years. The variation across States in average district size is even more extreme than the variation in total enrollments, as the average school district in Maryland has more than 100 times the number of students in the average school district in Montana.

Results from the survey indicate that States with larger districts report that a larger percentage of their districts have a fully automated student record system. This is not surprising, as both the size and complexity of such larger districts call for more efficient information processing strategies. There is little need for a fully automated system in a school district of 250 students, all of whom may be enrolled in a single building. In such cases, a single individual may be responsible for maintaining school records, and standardization of procedures and reporting formats is not an issue. Nor are the timeliness and accuracy of the information likely to be viewed as serious problems. This situation can be contrasted with a large school district composed of dozens of schools, where the data on individual students may be somewhat scattered, and there are sizeable distances of time and space between managers and the data on students they need to make decisions. Hence, large districts are more likely to automate their student record systems.

While States with large numbers of students and large school districts tend to house proportionately more districts that have automated their student record systems, the fact remains that in most States relatively few districts have fully automated systems. In many States, a majority of the school districts still rely on a paper system.

The reason this issue is addressed at such length is that district–level automation facilitates the development of State–level student record systems. If the districts in a State are already maintaining student information in computer–based systems, it generally is possible to transmit that information (or appropriate subsets of it) either to a regional processing center or to the State education department directly. As the in–depth interviews document, however, many of the difficulties in implementing statewide comprehensive student record systems have stemmed from districts that have no previous experience with automated student record systems.

FINDINGS FROM THE IN-DEPTH INTERVIEWS

The information derived from the in-depth interviews are categorized under three general headings: (1) the initiation of statewide student record systems; (2) the content of those systems; and (3) outcomes of statewide student record systems.

Initiation

The interviews covered a range of topics related to the initiation of statewide student record systems. The results presented here emphasize four major themes: (a) States' readiness for change; (b) incentives for change; (c) obstacles to change; and (d) the process of change.

Readiness for change

States differ in the extent to which they are prepared to implement State-level automated student record systems. Two key determinants of the readiness for change are the State's previous history with student record systems, and the nature of the data to be collected by the new system.

A State's previous history with student record systems -- especially the pre-existing use of technology -- influences the process of system development. As the national survey documented, some States house districts that already have well-developed automated systems, while others have less experience with computer technology. The more experience with automated systems at the district level, the easier is the path to statewide system development. One respondent noted, "Automated data management systems in school districts are nothing new. Many of our school districts have been doing it for years. Some are quite advanced, and for them [the new system] was virtually a welcome change in terms of data collection for the state because it meant less work for them." Another said, "Over the years, our school systems have been installing PC computers throughout the school which are on line with their own mainframes. If we were just starting fresh to do this today it would be very expensive, but that's not the case, most of them had these systems in place, we were just requiring them to submit the information differently."

Some States lacked extensive histories of automated systems at the local district level. Another respondent claimed, "Those school districts that have had strong data management systems in place really had very small costs and marginal increases of costs. . . .if the district was not positioned to do this kind of system and if the leadership in the district did not plan from the start (and many did not), then the cost escalated." And another pointed to variations across districts within a State in their pre-existing information processing capacity: "It's a very diverse world out there between the huge urbans and the very real kinds of school districts." As a consequence, said another, "We have created a good deal of burden on the school districts, particularly those school districts that are not very integrated in their technology."

Systems that involve reorganizing and reformatting data that are already being collected are easier to implement than those that involve new data collections at the local level. New data collections involve two steps: defining the data elements, and processing (i.e., organizing and transmitting) the data. This first step is an important one, and may require extensive planning prior to implementation. One respondent said:

We're going to develop a system and any [data items] that we put into the system . . . are going to have to be a byproduct of something that the schools naturally do anyway. They enroll students, so they use enrollment forms. Whatever we collected was something that the schools naturally collect. What we did was that we took the forms and put them onto the computer screen, and said, okay, fill out the screen rather than the paper. So everything that we've got we tried not to tamper with this notion that it has to be a by-product of something that the schools already do. We didn't manufacture anything else that the schools are not currently doing when the schools developed the system. That I think is the most important thing that we are able to do, so the schools could buy into the system.

He also advised, "If there is no process or procedure in place get that procedure in place first before you think about automating that procedure. Because if you go from no procedure to an automated procedure you are going to run into a lot of problems, and you are going to be constantly making patches here and patches there."

Change strategy: incentives

The States we studied have relied on various strategies for "selling" the need for statewide student record systems. Local school districts often need to be convinced that there is a need for change. Documenting that statewide student record systems can facilitate complying with State laws and that such systems can reduce the reporting burden that local districts bear are two common strategies.

State legislation requiring specific data reporting is frequently used to justify and drive student record system development. Many States have used State legislative reporting requirements as a major incentive for local districts to "buy into" a statewide student record system. One respondent noted, "The state has always collected data for the usual reasons of funding decisions as well as general information for accounting and so forth. A number of initiatives from the legislature gave specific demands upon the kinds of data that needed to be reported." Another said, "There were certain laws passed and forced us to define what was the dropout rate and how could we account for these [dropouts]." Moreover, the descriptive summaries related later in this report document several additional instances in which State legislation served as the primary impetus for system development.

Reduction of data burden at the local level also can be a strong selling point. Paper form-based systems often lead to overlap and duplication of effort, and the sheer flurry of paper traveling between local districts and the State can be overwhelming. One respondent said, "Right now we probably send out 35-40 different forms and every year a couple more forms get on that list. But what we are really trying to do is cut down on the numbers. . . . the best feature is we are reducing on collection." Another State, Wisconsin, documented that its Department of Public Instruction annually made more than 100 requests for data of its local districts. In most cases, automated systems can greatly reduce the volume and frequency of such data requests.

In some States, the reduction of burden was a selling point for school building-level staff as well as local district staff. One respondent noted, "We preach[ed] a sermon about how . . . information systems should make life easier for teachers and guidance counselors, that there a lot of paper things that those people were doing that should really be developed out of an automated system."

The argument that a comprehensive statewide student record system will be more useful than the existing data collection system rarely persuades local districts to cooperate. The claims that a statewide student record system can help meet legislated reporting requirements and reduce the data burden on local districts have been more successful in gaining local district compliance than the argument that the system will be more useful to local districts than their existing systems. Typically, the statewide system will in fact be more useful to local districts, but this may be easier to document after the system is already implemented. One interviewee said:

> Once you develop the base system and users see what is available, the system will continually go through an evolution of having more functionality as the users see the need. So, we try to accommodate as the need arises. So, the system is undergoing continuous evolution. But, in the beginning, when you ask [local districts] what are your needs, verbalize and express them to me so that I can crank them into the system, at that point in time it's hard for them to do that. So, once we gave them the base system they were able to see what's possible.

Change strategy: obstacles

All of the States we studied that already had or were in the process of implementing statewide student record systems had experienced some barriers to implementation. None of these were insurmountable, however.

The need to race to meet deadlines for system implementation in some states led to inadequate planning and staff training. In some cases, systems developed in response to state legislation had to meet unrealistic implementation timelines set by the state legislature. One State reported "problems, bugs" because of the "rush" to implement the system. Another respondent said, "I think that if [we could do] anything differently . . . we would probably have moved at least a year slower and gotten everybody more prepared. I think what the school districts [were] saying was that this was something that was probably going to go away and it took certain school districts two or three years to really decide that they were going to have to get organized to do this." What this latter quote indicates is that the pace of implementation is in the eye of the beholder. Some States have moved quite quickly from initial planning to full implementation, while others have spent many years carrying out similar activities. There is no question that legislative deadlines quicken the pace of implementation, but several States with such deadlines have had to push them back.

States rarely had sufficient time or resources to train local staff in how to implement new systems. The issue of staff training arose repeatedly in the interviews. One respondent said, "We could do more training, it's just a matter of staff time here [in the State department], but also staff time in the districts." Another reported, "One thing I would do in training [is] involve the role of the vendors more. We went out there and trained and told [local districts] these are the procedures and this is how you should do it, but it didn't connect at all if you could not connect it to their own software product."

Data confidentiality, privacy and security are recurring issues in the development of statewide student record systems. A number of States have faced lawsuits stemming from the collection of individually-identifiable data by the State education department. Typically the legality of such data collections is upheld, but not always. Virtually all States that we spoke to had spent considerable time and effort developing explicit positions regarding the confidentiality of the data they collect, and putting

in place procedures to ensure that only those individuals or groups that were entitled to have access to data on individual students were granted such access. In some States, concerns about confidentiality have resulted in statewide systems that house the data at the level of local districts or intermediate or regional service agencies. In other States, the exchange of data on individual students with other federal or State agencies has been contested. In any case, it is clear that concerns regarding access to data are serious matters, and must be treated as such.

The opposition of local districts to statewide student record systems frequently stems from a concern that the data will be used by the State for inappropriate accountability purposes, and thereby jeopardize local autonomy. Sometimes concerns about confidentiality are a cover for concerns about the use the State education department will make of the data. The phrase "Big Brother" recurred in our interviews. One respondent said, "There was quite a bit of fear that the reason we wanted to have all this information was to take over." Another reported, "There is a lot of opposition, some [is] opposition against sharing data that might be used against us." The truth of the matter is that most States do in fact use their statewide student record systems for accountability purposes, but local districts and the State education department may disagree as to whether those purposes are appropriate or not.

Change strategy: process

There is no modal path for the process of implementing statewide student record systems. The in-depth interviews we conducted evidenced many differences from one State to the next. But there are some commonalities as well.

There is a substantial variation across states in the extent to which the development of statewide student record systems has been supported by new financial or staff resources. Some States have invested heavily in system development, devoting millions of dollars to new equipment. Others have relied mainly on existing resources. A respondent from one such State said:

> [We] felt that the student and staff [part of the system] could still be implemented with the present resources, and we are the users of that data, so we pushed to get this part of it accomplished with the present resources. I would say that we received some friction from the folks that felt that it couldn't be implemented without a new appropriation. We rather insisted that it could be and that it needed to be, so we were able to convince the top administration that we should proceed on doing this. . . . In trying to sell [the] system to the districts, and going on the road talking to superintendents, there was some resentment [because] they wanted an allocation of money, but knowing that the data report system was going to be used to determine state aid payments they finally came to the realization that we need to change our reporting system, it was becoming cumbersome, and so there was some friction, but not a whole lot, only in certain areas of the state, and once they realized that there wasn't going to be any allocation of money that it could be . . . a reasonable task.

Some States have provided a per pupil allocation to enable districts to purchase equipment, including computers for instructional management. Not surprisingly, nearly all of the individuals we interviewed found fault with the level of resources available for system design and implementation. A typical response was, "Some of the things that are holding us back are money and people, we have the ideas and the vision, just if we had more money."

Successful systems gain the early support of program staff as well as MIS and data processing staff. This is an important point, and one that is not obvious, as MIS and data processing staff have the primary responsibility for implementing student record systems at the local district level. But it is still the case that the data that are stored in the system are generated by program staff, and their support is critical for system success. One respondent noted:

> Conceptually the MIS people bought in but they didn't like all the things we're requiring, but the program people do. Like the business about automated grade reporting, producing report cards and automated student records, our district MIS people didn't want to do that but guidance counselors were in love with that. I had one guidance counselor say, "Does this mean I won't have to calculate a GPA with a pencil anymore?" I said, "Yeah, that's what it means."

Another interviewee noted:

> The compliance people were some of the early people who began to appreciate the value of the system. This also included people who [run] special programs and federal funding type activities [who] had to use the system and they began to see the value, that they could get a lot more data out of it than they had with their own [isolated] reports before. So it's key that those users began to see the value of the thing.

One consequence of the early "buy-in" of program and instructional staff is that the student record system can be shaped to meet their needs. It is much easier to respond to such data needs while the system is still under development than after it is implemented. Another respondent told us:

> The premise and philosophy that we used [to develop the system] is still as valid today as it was then. Get the users involved heavily up front, and let them buy into the system from the very beginning, and let it reflect their needs more than the technical needs. . . . Get a representative user community, no matter how cumbersome and time-consuming it is going to be perceived to take. Take the time to involve a good cross-section of the user community from the very beginning. It's easy to be very dictatorial at that point in time, because it's expeditious and things can get done sooner. But, you are going to pay for that in the end when people don't buy into the system.

The critical step in system design in most States is the development of a data "dictionary" or handbook specifying clear definitions of data elements and formats that can be consistently applied across local districts. While many States have not imposed common hardware and software requirements for their statewide student record systems, virtually all States demand that data be reported to the State (and, in some States, to regional processing centers) in well-specified reporting formats, and that the data be entered using an explicit set of rules and procedures that are common to all districts in the State. In this way, States can ensure that the data they gather are truly comparable from one district to the next.

In some cases, creating such a data "dictionary" or handbook has meant attempting to reconcile long-standing differences across local districts in the definitions and reporting formats for various data elements. One respondent noted:

> Before we came up with our system, we had manual attendance systems, and districts were using their own withdrawal codes. And so when we got dropouts we all got apples and oranges. So when we developed our state's design for student data elements, we told districts that there were a number of areas we would let them crosswalk but everybody was going to use the same set of withdrawal codes and there was not discussion about that. And we were able to get away with that because we knew policy-wise that everybody would agree that in order to have good dropout data, you've got to have accurate consistent data.

Many States attempted to give local districts a sense of ownership of the system by giving district representatives joint responsibility for determining the definition of data elements and system design. One interviewee noted, "A big committee was set up defining the items that would be on the system, and spent months and months all over the state figuring out what was to be put on [it]." A respondent from another State identified this shared responsibility as critical to system success:

> What we think is the most important feature [of the system] is that it is a very precise and rigorous definition of specific elements that constitute the statistical backbone, that this goes through enormously long discussions with a wide variety of people, exactly what minimum data does the most statistical good in terms of delivering the kind of information that you need, and just exactly how should that data be . . . the least burdensome and the most meaningful and unambiguous statistically. . . . Then that data is justified by a wider range of input from review by standing committees and educational professionals -- I think that is the most important part.

Few States have brought all districts and all data elements on line at once; rather, the process has been more incremental, adding districts and/or data subsystems over time. This is understandable in light of the tight timelines and scarce resources frequently attached to statewide student record systems. An incremental approach enables the State education department to demonstrate some success, and to use that success to generate more resources and more support. One respondent said, "You've got to pick what you think is manageable, you've got to be able to demonstrate successes through operational projects both for your legislature and your executive management staff." Another made a similar point:

> When a state is deciding on an automated system they should consider the resources available. I know from talking to some vendors that some states have really gone the whole gamut, the whole ball of wax, and it hasn't become manageable. I think when a state is going to develop a system they should look to see what is manageable for them at the department level as well as the district level. There is so much start-up to automating the system both at the department and district level that it may be doomed to failure if you take on too much at one time.

Content

The in-depth interviews touched on two major areas regarding the content of statewide student record systems: (a) the determinants of system content, and (b) the operational features of the systems.

Determinants of system content

The student record systems that are either already implemented or under development in the States we studied are distinctive; no two are alike.

Data needs at the State level are largely determined by State and Federal reporting requirements. In many States, the issue of data burden is a pressing concern. One way to minimize the burden placed on local districts is to attempt to restrict student record system content to those data elements needed to satisfy State and Federal reporting requirements. Most systems have the capacity to expand or change in response to shifting requirements.

The perceived need for various types of data differs substantially from one State to the next. This is especially true in those States whose student record systems have arisen largely in response to legislative reporting requirements. Different State legislatures hold different kinds of education data to be important, and the frequency of reporting various types of data also differs from one State to the next.

The size of the State -- the numbers of students and school districts in its borders -- strongly influences how statewide student record systems are organized. This point emerged from the survey results as well. In the in-depth interviews, this point was most clearly seen in the use of regional processing centers by States with large numbers of students and districts. Not all States serving large numbers of students rely on such intermediate processing facilities, however.

Operational features

In some States, the student record system is part of an integrated management system; in such cases, it does not make sense to consider student records independent of staff or financial information. One respondent said, "[The system] includes the financial as well as the personnel staff, as well as the student system, so that the student system is an integral part of the entire state system in the way in which it operates." Integrated management systems frequently are more complex and ambitious than stand-alone student record systems. Hence, the design and implementation phase of system development also is lengthier and more complicated. In some States, resistance or opposition to the system had little to do with the student side and more to do with financial information.

Relatively few States rely on a single software/hardware configuration at the district level; but those states with regional processing centers are likely to use standardized systems at these regional sites. In many States, districts have either developed their own information systems, or purchased systems from any number of private vendors. One respondent told us that there were more than 40 different systems in his State. Because of this great diversity, both in the hardware and software that already exist in local districts, States have been reluctant to compel local districts to adhere to a single software/hardware standard. It is much more common for State education departments to allow local districts to choose their own configurations, and to rely on the data "dictionary" or handbook to impose consistency on the data system. There are, however, economies of scale that stem from standardizing software and hardware where it does not represent a hardship. For this reason, those States relying on regional processing centers often mandate common software/hardware configurations across those sites.

An identification number that uniquely identifies each child in a State is an essential aspect of a student-level record system. Anyone who doubts this should listen to the voices of respondents working in States which lack unique identifiers:

> We don't have a dependable unique identification [number], a unique identifier. We do have ID numbers, and in may cases they are Social Security numbers or they are a special number which is decided by the state . . . Districts can use those numbers for students. They're not required to use them, and when a student goes from one school or one district to another, we can't be sure that they carry that number with them and use it in both places.

Said another interviewee, "We have a student ID number, but it is a locally defined number and it doesn't follow the student wherever the student goes, if the student transfers there is no way to connect it to any other information."

One of the best examples of the value of a unique identification number is the dropout matching program in Florida. Florida has a voluntary program in which school districts can submit the names and identification numbers of youth they report as having dropped out of school. Some of these reputed dropouts may in fact be enrolled in other districts around the State, but a district might not be aware of this unless the receiving school requested a transcript. Sometimes this does not happen, and other times the recordkeeping might fall through the cracks. In either event, there is the potential that districts in Florida, as in other States, might have falsely identified some youths as dropouts due to the inability to follow them across school district boundaries.

In Florida, 40 out of the 67 school districts in the State submitted dropout records last year. The Florida education department was able to locate approximately 18% of those students in the State student record system, and determined that these students were in fact enrolled in other districts around the State, in a Florida GED program, or in Florida community colleges . The use of a unique statewide student identification number made it possible to follow students across school and district boundaries, as long as they remained in Florida schools. The system holds great promise for more accurately determining the enrollment status of young people thought to be school dropouts.

Outcomes

The implementation of comprehensive student record systems in those States that currently have them is so recent that few States have had the opportunity to fully exploit the potential of these systems to inform state-level educational policy. In several States, "getting the bugs out" has been the primary task of State-level information system staff. In others, staff training and system development remain high priorities. While the viewpoints we heard may have been colored by the fact that our interviewees typically were information system staff, we did not detect extensive use of comprehensive statewide student record systems beyond basic reporting functions and responding to spot requests for information. This may change over time as systems mature, but staffing problems, a perennial concern in many State departments of education, may place bounds on the ability of State departments to fully exploit their systems.

Local school districts do not use State systems extensively, especially small districts that lack large research and evaluation staffs. We also heard little evidence that districts used the State system extensively. In some States, of course, the information residing in the statewide system is a subset of the data contained in district information systems, but this is more true of larger districts than of smaller ones. While many of our interviewees held out the hope that their statewide student record systems would be useful to local districts, in most cases they acknowledged that was a long-term goal, contingent on a number of factors, including the training of local district staff.

CONCLUSIONS

A Climate for Change

The last decade has witnessed a widespread expansion of public debate regarding the condition of American education. The historic agreement among President Bush and the 50 Governors that led to the six National Education Goals and the formation of the National Education Goals Panel is the most visible evidence of this increased concern for the performance of the education system. The heightened interest in accountability and results also has been felt at the State and local district level, as legislators, business leaders, educators and parents have all grappled with the issue of how to enhance the educational opportunities and life chances of individual students and of our society generally.

The demand for greater accountability of the education system has led to a demand for more refined data that can be used to judge system performance. While there is much debate over the choice of indicators of the health and status of the education system, virtually all parties agree that high quality information is necessary for informed decisionmaking at every level of the education system. Many States have enacted legislation directing State education departments to gather and report to the public an array of information on students, schools, districts, and the State as a whole that would have been unthinkable 15 or 20 years ago.

The demand for higher-quality information, whether propelled by legislation or other means, has forced many States to confront the limitations of their existing data collection systems. Our results indicate that while relatively few States have implemented comprehensive State-level student record systems, there nevertheless is considerable evidence that many States are making progress toward increasing the quality of the data on students they gather and report. Many of the States that currently lack comprehensive student record systems are considering implementing such systems, and still other States are attempting to impose greater consistency and standardization in their data collection efforts.

The current climate stressing increased accountability at the State and national levels has opened a window of opportunity for the development of student record systems that produce more timely and accurate data for the States and the Nation as a whole. In addition to State-initiated activities, there are several leadership organizations, most notably the Council of Chief State School Officers and the National Center for Education Statistics, that have devoted considerable time and effort to helping States to increase the quality of their education data collection systems, especially with regard to data on students. A primary example is the ExPRESS project, an acronym for the Exchange of Permanent Records Electronically for Students and Schools, a joint effort of NCES and CCSSO focused on standardizing and promoting the exchange of elementary/secondary students' records among school districts and between

school districts and postsecondary institutions. Concerning high school completion and dropout data in particular, CCSSO and NCES have cooperated in the development of standard definitions of school dropouts and completers, and have field-tested these definitions in local districts as a precursor for State-level dropout reporting.

While there is a great deal of well-intentioned activity currently underway, we must also realize that the pace of system development overall is quite uneven. Some States have made rapid progress toward implementing comprehensive, integrated student record systems that fulfill a variety of functions. Other States are planning systems that may be in place by the turn of the century. Still other States have not devoted their attention to the challenge of designing and implementing student information systems for the future.

Diversity among the States

In reviewing the results of the 50-State survey and in-depth interviews, the diversity of State experiences is striking. Some States have histories of automated records systems of one sort or another that span nearly two decades. Other States have not even seriously considered the development of automated student records systems. A significant number of States house school districts that rely predominantly on paper systems. States differ in the kinds of data they maintain, the form in which the data are maintained, the level of data aggregation, and the uses to which the data are put. Several States developed statewide student record systems in response to State legislative mandates, while others developed systems in the absence of legislation.

The dynamics of system development also have differed from one State to the next. Some State education departments have successfully lobbied for new resources to plan and implement their statewide student record systems. Other States have relied largely on existing resources. The uncertainty of resources has accounted for lengthy lags between system design and implementation in some States, whereas other States have put systems in place in what can charitably be described as breakneck speed.

These differences in process should come as no surprise, for the decentralization of education in the United States has always been associated with substantial differences in educational resources, processes, and outcomes both within and between States. We documented earlier two key structural differences among States that are relevant to information system design and implementation. First, there are tremendous differences in the size of the school-aged population served by different States, with approximately one-fifth of the States enrolling more than a million students each year, and one-fifth enrolling fewer than 200,000 students per year. Second, States differ sharply in the average number of students per school district. Not counting Hawaii, which has a single school district of more than 170,000 students, nearly one-quarter of the States have school districts that average 6,000 students or more, including Maryland, where the average district size approaches 30,000. Conversely, nearly 20% of the States have school districts that average 1,000 students or less, including Montana, where the average district numbers approximately 275 students.

Taken together, these structural, historical and political differences among the States limit the utility of attempts to apply a common approach to system design and implementation across the States. This conclusion is at odds with the report of the Technical Planning Subgroup of the Resource Group for Goal 2. As noted earlier, the Technical Planning Subgroup called for NCES to take the lead in designing

generic student record systems that can be adopted by States, districts, and schools. Based on the results presented here, the Technical Planning Subgroup's recommendation seems ill-suited for addressing the diverse needs of the States. Rather, it appears as though an approach that is tailored more closely to the needs of individual States would be preferable.

Rather than relying on prototype systems that may be too general to respond to the needs of specific States, individual States attempting to advance their information-processing capacity will need to fashion systems that are sensitive to each State's specific data gathering and reporting needs, resources for system development, traditions, and legislative histories. Many States will require technical assistance in designing and implementing statewide student record systems. This technical expertise lies in the experience of NCES, CCSSO, individual States and local school districts that have developed student record systems, and private vendors who design and market such systems. A key issue is how to exploit this existing technical expertise to assist those States that could profit appreciably from it.

NCES has already anticipated this concern, organizing a meeting on automated education information systems held in February, 1992. Participants included representatives from seven States, three local education agencies, four private vendors, and staff from the CCSSO, NEGP, and NCES. NCES also has recently provided seed money to a handful of States to enable them to bring in consultants from other States with expertise in system design and implementation. While these efforts are promising initial steps, NCES has limited resources to devote to these activities, and cannot be expected to expand its efforts substantially with current resource levels.

Beyond Technical Assistance

At least as important as these technical concerns, however, is the problem of mobilizing the political will and financial resources necessary to design and implement statewide student record systems. In times of financial stress, there are few incentives to invest in the infrastructure of the educational system. When children and youth are not receiving the educational resources they need to succeed in school, few would be foolhardy enough to call for diverting resources away from the needy to support information system development and implementation. The irony is that statewide student record systems have the potential to encourage a better match between individual students' needs and the educational resources to which they are exposed, both through information used in day-to-day decision-making at the school building level, and through information that informs high-level policy discussions in the statehouse. Improving the quality of the match between student needs and educational resources holds the promise of making progress toward all six of the National Education Goals, especially Goal 2. Unless we find ways to harness the necessary political and financial capital, however, that promise may go unmet.

In its brief existence, the National Education Goals Panel has played a defining role in setting the agenda for American education. The media, professional organizations, States and local districts, and individuals interested in the future of our students and our schools all have listened intently to the Panel's deliberations, and many groups and individuals have shaped their actions in response to the Panel's work. For this reason, a strong statement in support of the Voluntary State/Local Student Record System might help galvanize those individuals and groups whose support is necessary to make this system a reality in many States.

While generating the political will to enact the Voluntary State/Local Student Record System is a prerequisite to successful implementation, the problem of developing the resources needed to implement the system still remains. This study did not address in any detail the dollar cost of planning, implementing, and maintaining statewide student record systems. Moreover, because State systems vary so much from one State to the next, it is not clear that even accurate accountings of costs incurred in one State would be of much use to other States.

One strategy for gauging the financial resources necessary to design, implement, and maintain statewide student record systems is to engage the two key leadership organizations in this area, the Council of Chief State School Officers and the National Center for Education Statistics, to work collaboratively with individual States to develop realistic budgets and timelines for statewide systems. Until we have accurate estimates of the resources needed for system development, it may be premature to worry about where the money will come from.

APPENDIX A

DESCRIPTIVE SUMMARIES OF SYSTEM STATUS IN TEN STATES

Delaware

The state of Delaware has a total of 102,000 public elementary and secondary students enrolled in 19 school districts.

Delaware's data system began with the state assessment program. The state legislature in the mid-1980's required that every school child in grades one through eight and eleven be tested every year with norm-referenced tests. The state contracted with a regional consortium to survey all of the schools once a year and collect basic demographic data on students and assign a student ID number. The system is now being added to and enhanced, so that it can accommodate more of Delaware's state and federal reporting.

Different districts in the state of Delaware use their own pupil accounting systems. There is one regional consortium that covers about 60% of the state's students, handling registration, report cards, scheduling, etc. on a single mainframe computer. Other districts use other approaches -- there is a total of about 40 systems in the state, some of which are PC-based, and the rest mainframe-based. Districts are responsible for data quality and integrity. Currently the Delaware state department of education during the course of a year makes 35-40 separate requests for data of its districts. Districts provide data to the state in various forms, including magnetic tapes, diskettes, and hard copy. Districts maintain their own data, and send records on individual students to the state level. Most of the relevant student data are stored at the state level in what is referred to as the student master database, a student-level file with longitudinal information on students that now extends from 1985 to the present.

The key to current developments is the use of the state assessment student identification number in all student records that are forwarded to the state. The system incorporating this feature began implementation in July of 1991. The statewide research and statistics council, with representation from every district, was influential in promoting the system. This council made the use of the unique student ID in their pupil accounting systems the primary agenda item for the current year. Another agenda item is to consolidate the collection of forms sent throughout the year, and at the same time move from paper media to reporting on diskettes or electronically through telephone lines. In addition, the state department has been able to demonstrate that the use of a unique student ID in district accounting systems can save the districts a great deal of time in sending student information to the state.

Data in the Delaware system are used for a number of purposes. The data are used for the state educational statistics report, as well as for the accounting aspects of Chapter One allocations, AFDC, lunch programs, and unit counts. Information demands also come from the federal level, the state board of education, and the state executive branch. The use of the student master database as the primary source of data has saved the districts and the state department a great deal of effort. The department also hopes to provide formatted reports to the districts and save them additional time.

The most important feature of the Delaware system is the unique student ID, because it is able to tie together information from diverse sources, including dropout counts. The state identifier also allows for longitudinal analyses of the performance of differing cohorts of students and even follow-up studies of high school graduates, although funding difficulties may place such analyses in jeopardy. Although the unique state ID number is not the child's Social Security number, staff describe the use of a Social Security number in the system as extremely important to the child services cost-recovery program. The costs that districts expend on certain services, such as medial and psychiatric treatment, provided to Medicaid-eligible children and families will be reimbursed if those children are identified properly. The Social Security number makes it much easier for the state to identify Medicaid-eligible children. The current year is a transition year in the recording of Social Security number, and eight of the 19 districts have already put Social Security numbers on all of their applications. The state also gathers GED data by Social Security number.

Major challenges to date have been a lack of adequate staffing and funding. Nearly all staff time is spent collecting, analyzing, and reporting data, with little time left for planning for the future. A major challenge for the future is developing a data dictionary that specifies data elements, codes, and formats. Currently, districts can use any codes they choose in their own accounting systems, but the state needs to ensure that districts can communicate in a common state format.

Florida

The state of Florida has about 3 million pre-kindergarten to grade 12 students enrolled in 67 school districts.

Florida's state legislature in the mid-1970's passed a statute requiring the development of statewide comprehensive management information systems. The purpose was to produce better data for decision making and to try to make the process of gathering and using the data more logical and integrated, while also reducing redundancy. In the early 1980's the legislature funded the development of a statewide electronic network connecting all school districts and post-secondary institutions in the state as a means for implementing a comprehensive statewide management information system. The network became the primary vehicle for state reporting. The legislature funded the network, and then provided seed money for selected projects. It did not fund the development of the system at the school district level. While the legislature provided for the operation of the network, the operation of the state level staff, and some money to flow through the districts on an as-needed basis, its position is that districts should use general administration dollars to fund district systems.

The system has been in development for about six or seven years and just became fully operational last February. The school district MIS council was actively involved in the development of the network. State-level staff tried to involve district MIS people and data processing people, as well as program people at both the district and state levels. The state department attempted to demonstrate to the districts that there were questions that could be answered with a student database that could not have been answered before. A central theme was that building information systems is not an end in itself; rather, information systems are based on who is being served by the system, what questions the system is attempting to answer, and what kinds of functions the system is intended to perform. Department staff also emphasized how the system could make life easier for teachers and guidance counselors by automating many paper forms.

Florida's system includes state reporting, local recordkeeping, and electronic student record transfer (the ability to electronically send records between schools within the state). The Florida system combines student data with other personnel data in a comprehensive, integrated way. The state department of education defines certain functions that each district must provide, along with a set of about 150 data elements. The information collected at the state level includes basic demographic information, special program participation, student course enrollment (linked to teacher class records), assessment data, and end-of-year information such as enrollment, withdrawal and graduation data. The system also includes data on adult students. Districts send multiple student records during the year to the state through the electronic network.

Florida does not rely on a standard software vendor. Different districts use different software. Every district is required to have a host computer, which may be shared with other districts. At the state level the data are maintained on a large mainframe computer with records processed in a relational database. The state maintains approximately 40 million student records.

The main purpose of the system is state reporting -- satisfying the legislature and the executive management. Legislative staff may be the most important consumers of the system, and their interests include student, financial and personnel data. Federal reporting is simply spun off of the regular reporting systems. Data are primarily being used by MIS staff, but the department is beginning to provide data to

other key users in the department and to external audiences such as legislative staff. Sometimes these staffs are able to access the data directly themselves. An important use of the system is to track students across boundaries. The state is able to determine what happens to students who complete or exit programs, and can identify students reported as dropouts in one district who have enrolled in another district. Individual districts probably would not be able conduct these kinds of tracking analyses.

Most school districts in Florida accepted the notion of a comprehensive statewide MIS system in principle, but many had concerns about the specifics of implementation, including the content of the system and the pace of implementation. Many district staff believe that, although the development process was somewhat painful, it has resulted in cleaner and more consistent data. The local districts believe that the legislature underfunded the development of the system. Several districts joined in a lawsuit filed regarding the legality of collecting individually identifiable data at the state level. That suit was settled favorably.

Hawaii

The State of Hawaii enrolls more than 173,000 students in a single school district that covers the entire state. It is the only State with a single school district.

Beginning in the early 1970's and continuing into the mid-1980's, the Hawaii Department of Education relied exclusively on the State's mainframe computer for all its automation support. With the exception of on-line data entry of special education student placement data, all school and other student data were keypunched and subsequently processed overnight in batch mode onto the State's mainframe computer.

In 1984, the State legislature appropriated funds for the purchase of a minicomputer by the Department, and with subsequent upgrades, this computer platform became the backbone of the current on-line student system. The system was developed incrementally, both with regard to the number of schools on the system and the types of data maintained. Initially, the system emphasized basic student enrollment and accounting information, focusing on keeping track of school and student enrollment data. Over time, the system's capabilities were expanded to handle student scheduling, grade reporting, maintaining information on instructors, master timetables for schools and individual student schedules.

There are a number of other data elements that are maintained on individual students, including an on-line suspension reporting system, and data on participation in programs for special education students, for limited English proficient students, for vocational education students, and, owing to the large number of military installations in Hawaii, students' connection to the military establishment. There is a separate testing student testing system, covering statewide achievement testing in Grades 3, 6, 8, and 10, and a competency certification testing for students in Grades 10 through 12. Although the testing systems are not an integral part of the student system, both are linked to the basic student information system through the use of universal student identification numbers.

The system was developed with the cooperation of school staff and other interested groups in the Department, and the success of the system can be attributed to the early involvement of a representative user community who assisted in defining the operational and system requirements. One of the early tasks that the Department performed was inventorying the data elements, forms, and procedures that were already in use within the school system; although this task was tedious and time consuming, it was nevertheless necessary and vital to the success of the project.

The method of system development was premised on the belief that all data collected and maintained on the student database would be the natural by-product of some process or procedure that already exists in the schools. It was the strong belief of the Hawaii Department of Education that by adhering to this premise as a guide, schools would be more likely to see the benefits and thereby be willing to "buy into" the system.

Today, most schools in the state have at least one terminal and one printer connected to the Department's minicomputer. Schools perform student enrollment and accounting, attendance processing, student scheduling, and grade error corrections directly on-line. The mass reporting of grades is typically shuttled on bubble sheets from schools to the centralized state office for scanning. After scanning is completed, all transactions containing missing or bad grades are placed on an error file awaiting direct on-line correction. The Department produces report cards for all secondary schools in the State. Currently

76 secondary schools and two elementary schools are on-line, and plans are being made to add the remaining 158 schools in the State after the capacity of the Department's telecommunications network is expanded.

The system is used by curriculum developers for instructional program improvement, by management and planning staff for accountability and state/federal reporting purposes, and by both the personnel and budget offices in determining funds and teacher allocations. Moreover, at the building level, schools have entered into joint working arrangements with other agencies to use data stored in the system for the benefit of students. For example, students' attendance records might be furnished to the Family Court or juvenile authorities when appropriate. There also is an attempt to coordinate with the state welfare office to see if data on students who come from families receiving food stamps can be automatically qualified for free or reduced-price lunches. Attention is being focused on this issue because many eligible secondary students are not applying for participation in the program even when they are eligible. Joint inter-agency agreements may possibly result in an alternative way to accomplish qualification and certification.

The Hawaii Department of Education has requested funding support from the state legislature to begin developing a decentralized information system that disseminates data processing power to the building level; this is consistent with the Department's plan to move towards school-based management. Under this information architecture, it is expected that the Department's minicomputer will continue to maintain a certain amount of data for enrollment analysis, teacher allocation and performance accountability purposes, as well as for certain state/federal reporting requirements.

The Department has prepared a five-year plan that calls for bringing 20% of the State's 234 schools under the new decentralized system in the first year, and incrementally connecting all 234 schools by the third year. The information system staff envision a local area network (LAN) with a file server in every school, with personal computers on the desktops of principals, vice principals, registrars, attendance coordinators and counselors all connected to the LAN. These LANs will in turn be connected to the Department's host minicomputer system.

Maryland

The state of Maryland has approximately 736,000 students enrolled in 1200 schools in 24 school districts across the state.

Two years ago the state superintendent and state board directed the Maryland State Department of Education (MSDE) to produce annual state, district and school performance reports, necessitating the development of an individual student record system. The Department set up several committees around the state, composed of Department staff and representatives from each of the 24 local education agencies (LEAs). These committees spent a great deal of time defining the data elements that would be on the system. Local representatives included a mix of instructional, research, and information system staff. Once data elements were defined, the Department staff set about defining the format for collecting the information. State MIS staff worked closely with the district information system staff. Problems with definitions were resolved to insure uniform and comparable data collection and reporting. Beginning in 1991, data on attendance were collected at the student level from 22 of the 24 LEAs. By 1993 all LEAs are expected to provide student level data.

State, district, and school performance reports include data on assessed student knowledge (functional tests), student participation (attendance and dropout rates), student attainment (promotion rate and high school program completion), student population characteristics (enrollment and mobility), students receiving special services (special education, NEP/LEP, Chapter 1, free and reduced price meals), and other factors (expenditures, staffing and length of school day and year). The data include student demographic information (sex and racial/ethnic group). The Department is working toward a unique student identifier that would link students to career and technology education and special education data systems already in place.

The data are mainly used for state reporting requirements. That is, the data are designed to facilitate school improvement by identifying the strengths and weaknesses in schools through the Maryland School Performance Program.

Most of the LEAs in the state have mainframe computers and have been installing microcomputers throughout the schools that are on-line with the district mainframes. For most LEAs, there was little need for new hardware to generate the individual records required by the state. Maryland is, however, installing new computers to process the information. Data are transmitted by the districts on magnetic media to the state's mainframes where it is aggregated. The exchange occurs once a year. Previously the department collected the data only in summary format from each LEA.

The data system will be expanded to include new data elements over time. The key to successful expansion will be the adoption of a standard student numbering system that will enable the system to function as a student tracking system, following students over time and across districts and state boundaries and allowing for links with other student data systems.

The major opposition at the local level can be characterized as, "too much, too soon" in a time of dwindling resources.

Minnesota

The state of Minnesota has approximately 700,000 students enrolled in about 440 school districts across the state.

In the mid-1980's, the computer section of the State Department of Education had designed an overall reporting system for education around an integrated database. Efforts to get a state appropriation for this computerized system were unsuccessful in the 1988-89 legislative session. Department staff were able to convince the Department's top administrators that the student and staff components of the proposed system could still be implemented with the available resources. In the summer of 1990, the Department drafted a three-year plan to implement student and staff data reporting. This year is the first year of implementation for the student component of the system.

The purpose of the Minnesota Automated Reporting Student System (MARSS) is to collect information to calculate the general education revenue payments as well as to fulfill some federal reporting requirements. The data are used in the funding formulas, and counting completers and dropouts. In the long run the state department plans to add other information necessary to meet state reporting needs, including vocational data and activity-related data. Other data elements that are planned additions include civil rights reporting and particular categorical reporting. Student performance data are not a part of this system, but the state may be adding data to judge progress toward outcomes-based education. The system does include the student Social Security number, which in some cases is also the state reporting number for the student. However, students' names are not currently stored at the state level, although this may change in the future.

Most districts in the state of Minnesota were already automated at the time the MARSS system was implemented. Districts use various hardware and software configurations. Some school districts are linked directly to mainframe computers housed at regional computer centers around the state. Others rely on stand-alone micro and minicomputer systems. Currently there are perhaps 10 different software products being used by the districts. School districts create a student record for each student, using a common file format defined by the state, and send those records to the regional computer centers. Data are transmitted from the districts either electronically or through diskettes. The records are then edited and sent to the state on magnetic tapes. The file maintained at the state consists of individual student records, each with 34 essential data elements. Maintaining individual student records is a change from previous practice, in which districts would combine records stored at the district level in various ways to produce student statistics. In the past, only aggregated data were sent to the state, and the state had no control over how districts aggregated their data. Staff believe that the use of common aggregation procedures at the state level will reduce errors and heighten comparability across districts. The student-level data will be only used within the Department of Education, but aggregated data are used by many agencies and individuals.

The department conducted workshops in the spring and fall of 1991, training about 1500 people on the reporting procedures of MARSS. Software vendors also trained users of their products in how to put the information on the system. The regional computer sites were responsible for much of the training of district staff, especially regarding the transfer of data from the district to the regional site. Local districts were somewhat resentful that they did not receive an allocation of money for system development, but they realized that the reporting system was going to be used to determine state aid payments and that the current system was too cumbersome. There already was in place a regional computer system, but it

was used primarily for financial matters and not student recordkeeping. Most districts in the state already were automated and most already had sufficient hardware and software. The MARSS system was viewed as manageable, as it represented only a small piece of the integrated data base that had been proposed.

In the long run, the State Department of Education hopes to devise an integrated management reporting system that will serve management needs at the school district level. Also, many people anticipate that the regional mainframes will be abandoned and districts will rely increasingly on stand-alone micro and minicomputer systems. A major obstacle to system development has been the limited amount of staff time available for training; this includes limited time for state-level staff to train others, as well as limited time for district-level staff to be trained.

Ohio

The state of Ohio serves approximately 1.8 million students enrolled in more than 600 school districts across the state.

For the last decade, Ohio has maintained approximately 25 state-funded computer consortia serving the data processing needs of approximately 80% of the school districts in the State. While some districts had invested in automated pupil-accounting systems for their own internal purposes, the data collected by the state were largely transmitted on a variety of forms, with deadlines throughout the year. Most of these forms reported aggregate figures, not data on individual students.

In 1989, Senate Bill 140 mandated that the State Department of Education collect and report detailed information on students, staff and costs, beginning in the 1991-92 school year. The State Department of Education concluded that its existing forms-based strategy of data collection could not be efficiently extended to meet the reporting requirements of Senate Bill 140. Hence, the Department began planning a new automated system that would incorporate student, staff and cost information.

The State Department has mandated that districts maintain standard records that are machine-readable by the consortium computers, but the State has not developed its own software system. There are a number of private vendors who provide software to maintain the student records. Districts transfer records on individual students to the computer consortium sites, which aggregate the student data and transfer the aggregated data electronically to the State Department of Education's mainframe computer in Columbus, using State-developed software and the State's microwave network. No records on individual students are maintained at the State level at this time.

In preparation for the system, the State Department of Education formed two committees to advise on system design. The first, focused on data elements and start-up issues, involved a broad cross-section of perhaps 200 interested parties across the State, including representatives of education organizations, local district personnel, data providers and software vendors. This committee provided substantial input into the system guidelines specifying the standard definitions and record formats for student, staff and cost data.

The second committee, called the "Reporting Committee", was charged with setting up the Educational Management Information System (EMIS) reports mandated by Senate Bill 140. Among the reports mandated by Senate Bill 140 is an annual report like a "report card" including data from the system. There are also periodic reports on testing data. The state computer also maintains a "Vitals" system producing reports on individual school districts and, eventually, on individual school buildings. The Reporting Committee, consisting mainly of school staff chosen by the State's major educational organizations, designed report forms for the system that are intended to provide useful, brief comparisons of school districts and buildings. It is expected that reports will be issued beginning Fall, 1992.

The Ohio General Assembly has provide subsidies distributed by the State Department of Education to local districts to develop the system and to help districts get started. Districts that already had strong data management systems in place incurred relatively low costs in meeting the system needs. Start-up costs were especially high in those districts that did not plan in advance how to implement the system. While the State held a series of regional meetings to explain the system guidelines, there was a shortage of resources to train State Department staff to train staff in local districts.

The new system has forced districts to orient their thinking away from providing data on specific programs and toward a coordinated data reporting system relying on a common core of data. A long-range goal is to transform the Ohio automated system from a data reporting system to a management system that can be used at the classroom and teacher level for instructional management and at the district level for planning and management functions. When this goal is achieved, the State and Federal data collection requirements will be addressed as a natural extension of the system, rather than as driving the system.

South Carolina

The state of South Carolina enrolls more than 600,000 students in 91 school districts across the state.

Currently the State Department of Education relies on several systems for collecting data on individual students. The state testing programs, which span the elementary, middle and high school grades, collect individual student demographic data, including a student's name, gender, ethnicity, date of birth, and identification number, as well as student performance information. The state also maintains a record of students reported as dropouts, identified by an identification number. The state department also collects the names of students who are going to receive a state high school diploma or certificate of completion, maintained in a paper-based system. Pupil accounting information is not maintained in the form of individual student records at the state level. Rather, districts provide aggregated reports of enrollment and attendance data that are transmitted to the state either electronically or on paper.

The data in the various subsystems are used for differing purposes. The testing data are used primarily for state-level accountability purposes. These data also are reported back to the school districts for their own accountability purposes and for local program evaluation. Some of the individual data collected are used by offices or groups within the State Department of Education, such as the offices for dropout prevention, state research, federal programs, adult education, policy research, and finance. None of these uses, though, relies on the actual identification of individual students. Data are also used to satisfy federal reporting requirements.

A major limitation to the current organization of South Carolina's system of student records is the lack of a dependable unique identifier for individual students in the state. Districts are not required to use identifiers for students that are not duplicated in other schools and districts across the state. Some districts use Social Security numbers as their student identifiers, while others use another 9-digit number system provided by the state, but these numbers do not follow students as they cross district boundaries. In some districts, students may even change numbers from one year to the next. As a consequence, it is virtually impossible to merge the various files on students maintained by the state, because there is no guarantee that students can be reliably matched through identifying numbers, or even through names or birthdates when such information is available.

Last year, the incoming State Superintendent of Education formed a series of teams composed of school people, business people, and parents to examine various aspects of public education in South Carolina. The deliberations of these teams resulted in a recommendation that the use of technology in all areas of education, including administration, be increased. This recommendation spurred a major review of the data that are currently collected at the state level. An internal committee in the State Department will describe all of the data items currently being collected, and why those data are being collected. This committee will then forward the priority data items to a justification committee composed of a mixture of state and district personnel. The justification committee will review the data items and recommend a set on which there is broad agreement of the need for continued collection. Regional information systems groups, that in the past have assumed responsibility for training and dissemination, will prioritize the data elements that are most in need of automation, and will initiate the steps toward automation at the district level.

There are several goals for this new automated system. First, the state department hopes that, by reducing duplication and paperwork, the system will represent less of a burden on local school districts. Second, the increased efficiency of the system is expected to lead to more timely and accurate information that will be more carefully defined and controlled. Third, the new system should allow for greater integration, extending the range of policy analysis possible with the existing data. State personnel also express a concern that the local school districts benefit from the student record system as much as the state department does, so that the system is seen as a total education information system for the state, not simply the state department's system.

Texas

The state of Texas has approximately 3,500,000 students enrolled in more than 1,000 school districts across the state.

Historically, the state of Texas had always collected data for purposes of allocating funds and accounting, and the state legislature occasionally made specific demands on the kinds of data that needed to be reported, such as school dropout counts. In 1984, on the heels of the school reform movement, discussions in the state began on what kinds of data might be used to hold schools accountable for student performance. In 1986, the State Board of Education approved a plan for an information system designed to consolidate the flow of information from schools and school districts to the state. A major emphasis on this new system, christened the Public Education Information Management System (PEIMS), was accountability. The system, which includes information on students, personnel and finances, actually started operation in 1987.

Department staff in charge of developing the PEIMS system chose not to attempt to implement a uniform processing system at the school and district level. Staff recognized that school districts in Texas had many ways to process data at their local sites, some of which were quite primitive. They believed that the five to ten years that might be necessary to implement a uniform system at the local site level was too long to wait. Instead, they focused their energies on developing common data definitions. The mandate from the state to local districts was that they must extract specific data elements according to a common format so that the data could be forwarded to the state. One consequence of this strategy was to force local districts to expend a great deal of effort in organizing and integrating the data maintained at the district level so that the data on individual students could be transmitted to the state.

Texas gathers data on individual students, including identifying information, demographics, participation in special programs, attendance, retention and promotion information, and data on course completions. Social Security numbers, with an alternative number used when the Social Security number is not available, are used for identifying the 3.5 million students in the system. Local districts extract the relevant information from their local databases, and forward the data, typically using diskettes or magnetic tapes, to one of 20 regional service centers around the state, which in turn edit and transmit the data to the state department. Future plans call for the use of a telecommunications network for data transfer.

The PEIMS system is viewed as the major source of data exchange between local districts and the state. The system is seen as the primary means for holding schools accountable for student outcomes. The system is used for funding and federal reporting purposes, but the accountability function is primary. The system also is being used for desk reviews, so that state staff in charge of funding compliance, accreditation and audits are able to access the relevant data on their desktops through the PEIMS system rather than through site visits. The PEIMS system also is the primary source of data for the Academic Excellence Indicator System (AEIS), which produces "report cards" on school districts and campuses, and serves as the primary vehicle for accountability at the campus level.

Although the state department conducted an extensive review process of the data elements and format, involving a wide range of standing committees and education professionals, the system is still seen as a major burden imposed by the state on local districts. Over time, however, districts have come to recognize the benefits of organizing the data they maintain. The system came into place before some relevant parties had made commitments to use it, in part because it was hard to "sell" the system before it was actually in place, and people could see what the system could do for them. A slightly slower pace of development might have allowed for better preparation of individuals for what lay ahead.

Currently, the system still requires an extensive amount of manual intervention as the data move from the campus to the district office to the state, as the cycle calls for data to be collected, published, re-entered and republished at various points. The hope for the future is that the data can be captured at the source and moved more efficiently through the system automatically. This conversion may take ten years to be fully implemented. A corollary activity is the development of a student record transfer system allowing districts to exchange information electronically on students who transfer across district boundaries.

West Virginia

The state of West Virginia has more than 300,000 students enrolled in 55 school districts across the state.

In 1988, the West Virginia legislature passed a law mandating the production of an annual report card at the state, district and school level. An adjoining section of the law concerned school accountability, and specified data that would be used to judge whether schools were in good standing. The West Virginia Education Information System (WVEIS) was designed with these laws as well as other local, state and national data needs in mind. An evaluation committee, with representation from districts, regional service agencies, the state department of education, and other agencies, recommended the system now being implemented. In 1990, the West Virginia legislature passed a law mandating that school districts participate in the system.

The state department of education requested a one-time special appropriation of $21 million to initiate the system. The legislature authorized $9 million in principal and interest over a six-year period for equipment, and mandated that the system be in full operation by July, 1993. The counties and the state department were obliged to finance the rest of the costs out of their current budget allocations. Currently the system is still in the development stage. A small number of counties (which are coterminous with districts) are on the system, but in some cases only a few schools in those counties are on the student system. Until the system is fully operational, the state will maintain a dual reporting system.

The West Virginia system is described as a comprehensive, integrated information system that combines student information with personnel and financial data. The system is designed to accommodate federal reporting requirements, state laws and requirements, and demands for data at the building level. Among the types of student data housed in the system are state assessment data, biographical and demographic data, pupil accounting data (i.e., enrollment, attendance and graduation data), and data on special program participation. The system uses a common state identification number assigned to students as they are entered into the system at a particular regional site. This number will follow students if they move within the state. The student's Social Security number is maintained as a data element but it is not used as an identification field. The system is not designed for teachers to make use of for day-to-day instructional information, but it does give building-level staff the capacity to use data to make decisions.

West Virginia has eight regional service agencies, each of which houses a regional processing center. Personal computers at the schools and county offices are connected via dedicated phone lines to mainframe computers housed at the regional processing centers. No data processing is done at the school sites, and the data are maintained in a relational student database at the regional centers. A single software product is used across the state. There also is a dedicated phone line from each regional site to the state department of eduction. State department staff will not have access to the individual student records stored at the regional processing centers. When necessary, the state department will ask the counties to authorize the regional processing centers to extract subsets of the student files for particular research or reporting purposes.

Vendors, state department staff and regional service agency staffs will be continuously training county and building-level staffs in how to use the hardware and software. In early summer the state department staff will begin training county-level administrators to use the communications feature of the computer network. Training of staff at all levels will continue through the implementation period of the project. Future training in effective use of the available data will be offered to all end-users of the system.

A pilot study of three counties indicated that the hardware and software which was selected for the system could be modified to meet current federal and state reporting requirements. A committee is currently meeting to determine data needs that might not be met within the confines of the current system. An example is the need to rewrite the software to allow for more testing data within the system. Special education and vocational education have also been identified as areas where revisions might be necessary.

Resistance to the system has largely stemmed from the financial portion of the system, not the student side. Many school districts in the state were reluctant to abandon their existing financial management software. Nevertheless, they are under some pressure to make progress toward implementing the system, because state law does mandate full implementation by July, 1993. It is projected that by December, 1992 85% of the counties in the state will have at least some schools on the student system, and 50% of the counties will be using the financial system.

Wisconsin

Wisconsin enrolls approximately 770,000 students in 430 school districts around the state.

The state of Wisconsin currently maintains three independent student records systems at the state level, each with a distinct purpose and history. The special education child count system, in place for the last five years, exists mainly to satisfy federal and state reporting requirements, and is also used for program evaluation purposes. The vocational education system was originally designed over a decade ago to meet federal reporting requirements. The three-year-old assessment system, administered by a private vendor, gathers data on third graders' performance on a statewide reading test each year.

The data in these systems are maintained on a mainframe computer housed at the state Department of Public Instruction. The child count and vocational education systems rely on a mixture of paper forms and electronic media (typically diskettes) to transmit data from districts to the state. In some cases districts transmit data over an electronic network maintained by the state. The private vendor contracted to gather assessment data provides magnetic tapes to the state department.

In 1991, the Wisconsin legislature directed the state Department of Public Instruction to begin publishing by 1993 an annual performance report for each school district in the state, specifying a number of student outcomes and performance measures to be reported. This legislative mandate, coupled with an earlier study conducted by the state department documenting more than 100 annual requests by the department of local districts for aggregate data of various types, became a catalyst for considering a comprehensive statewide student record system maintaining individual student records in the state Department of Public Instruction. The Department's Administrative Council endorsed a recommendation to implement a statewide student record system in March, 1991.

The state department has recently developed a plan for the Wisconsin Automated Student Record System. This plan calls for the state department to take the lead in defining data elements and file formats, providing technical assistance to local districts in selecting appropriate automated systems, and addressing important concerns about privacy, confidentiality, and data security. The proposed system will rely on a unique identification code for each student, typically the child's Social Security number.

The Department of Public Instruction, in cooperation with local district officials, will develop a data handbook defining data elements. School districts will be encouraged to implement automated student record systems that initiate automation in the classroom, but the Department will not prescribe any particular hardware or software products. Rather, districts may adopt any system that will meet the statewide system needs. The statewide system eventually will facilitate electronic communication about students between schools and districts, and between districts and the state, using bulletin boards, data networks, and computer tapes or diskettes.

The Department of Public Instruction is promoting this system to districts in Wisconsin as a means for reducing the burden and frequency of reporting data to the state, for easily transferring student records from one district or school to the next, and for providing resources for classroom management and strategic planning. From the point of view of the Department, the new system will provide more accurate, timely and usable data on individual students, and will be a flexible tool for

addressing a wide range of policy and strategic questions that cannot be easily anticipated in advance.

The project plan for the automated student record system consists of three initiatives focused on separate aspects of the project. The external initiative is primarily concerned with interactions with local school districts, regional service agencies, and software vendors. The Department will develop an advisory group with representatives from these three constituencies that will meet regularly and advise the project team. Over the course of the current year staff committed to the external initiative will initiate an exploratory pilot project involving a sample of districts; survey districts and other states to understand current systems; meet with systems vendors to explore their ability to tailor products to meet the system needs; and submit drafts of data definitions to districts, regional service agencies, and vendors.

The internal initiative is concerned with building a project team within the Department of Public Instruction and handling issues internal to the Department's interest in the system. Over the course of the next year, the staff assigned to the internal initiative will review current data collections in the Department; identify the data needed to meet current reporting requirements; begin work on the pupil-accounting data dictionary; develop computer programs to process the individual student records received from districts participating in the exploratory pilot study; choose a coding system for identifying individual students; and plan the a comprehensive pilot study.

The legal initiative is concerned with the laws and administrative rules that bear on the automated student record system. Staff assigned to the legal initiative will review state and federal confidentiality requirements, and make recommendations for revisions to statutes and administrative rules, so that they will conform to the system plan.

APPENDIX B

QUESTIONNAIRE ON STUDENT RECORD SYSTEMS

Information is needed about student record systems in your state. This initiative is being undertaken to assist the National Education Goals Panel in their attempt to develop better ways to obtain information on school completion and dropout rates (Goal 2). In order to accurately measure these rates, more complete and comprehensive data on students is needed. Student record systems have been recommended by the Goal 2 Resource Panel as the best way to collect those data.

A student record system is a data collection system that has as its primary unit of input an individual student. For example, a collection that has as its lowest level of disaggregation the number of students in a school is not a student record system because the most basic level of input is the school. A collection that could be disaggregated to the particular record of an individual student (e.g. John Doe, 577-24-9384, Jan 1, 1976/M/White) is a student record system. A student record system could then be used to generate totals for schools, districts, and a state, but at the initial and most elementary level of collection, the information being collected is for an individual student and data remain available for that student.

With this definition in mind, please provide brief answers to the following questions and elaborate where appropriate.

1) Do you have an individual student record system for all or some of the students in your state? Yes ___ No ___

   Lowest Level of Disaggregation _____

2) Does your state have a comprehensive state-level student record system which includes all students in the state and contains various descriptive data elements for the individual students? Yes ___ No ___

   A) If not, are there different systems that can be linked together with student identification numbers to enable the separate databases to function like one database? Yes ___ No ___

   B) Alternatively, are there different state-level student records systems that cannot be integrated in any way? Yes ___ No ___

   C) Is your state considering the development of a comprehensive student record system? Yes ___ No ___

3) Please complete the matrix on the next page to provide additional information about the different student record systems that exist in your state. The following paragraphs provide information about the matrix:

In Column 1, types of state-level student record systems that could exist in the state are listed. Above the shaded line is a row for an "Integrated State Level System." If you checked "Yes" in question 2 or 2A, indicating that your state has a comprehensive state-level student record system, then responses describing that system should go in this row. Below the shaded line is a list of possible "Independent and Non-Integrated" student record systems. If you checked "Yes" in Question 2B, indicating that there are different state-level student record systems but they can not be integrated, then responses describing each system belong in these rows.

In Column 2, check the "Partial" cell if the student record system covers a particular subset of the student population (e.g. special education students, or vocational education students). Check the "Complete" cell if the system includes every student enrolled in the public schools in the state.

Columns 3 through 6 request information on the management of each student record system listed. Each of these four columns has either four or five sub-columns entitled "Fed," "Stat," "Inter," "Loc," and "Bldg." These designate the level at which the particular management feature in question is being performed. In some cases, more than one level may be appropriate. The abbreviations mean the following:

Fed	- Federal	Inter	- Intermediate Agencies or Regional Centers (e.g. BOCES)
Stat	- State		
Bldg	- Building	Loc	- Local (school district, county, etc.)

In Column 3, indicate where student record systems are housed. This means the level of administration where records are sent and stored. If there is a mainframe computer that is the ultimate destination and that mainframe is managed by the district, then the "Loc" cell should be checked.

In Column 4, indicate the level at which the student record systems are maintained. This might be the same as where the system is housed, but not necessarily. Perhaps the destination of the student records is a mainframe that belongs to an intermediate unit, but the actual maintenance of the system (updating, adding new records, etc.) is done by the district. In this case, the "Loc" cell should be checked.

In Column 5, indicate the level at which one may access information from the system. Here, more than one cell may be checked. If district officials, intermediate unit officials and state officials may access the system to run cross-tabulations or calculate totals, then all three of those cells should be checked.

In Column 6, indicate the level at which it is decided how the data elements in the student record system are to be defined.

QUESTION 3: LEVEL OF MANAGEMENT OF STUDENT RECORD SYSTEMS

Column 1	Column 2		Column 3				Column 4				Column 5					Column 6				
Student Record Systems	Partial/Complete		Records of the System are Housed at:				The System is Maintained at:				The System is Accessible From:					Decision of Definition of Data Elements is Made At:				
	Partial	Complete	Stat	Inter	Loc	Bldg	Fed	Stat	Inter	Loc	Fed	Stat	Inter	Loc	Bldg	Fed	Stat	Inter	Loc	Bldg
Integrated State-Level System																				
Independent and Non-Integrated State-Level System: Attendance																				
Scheduling																				
Dropouts																				
Graduates/Completers																				
GED Test Takers																				
Free Lunch Eligible																				
Transportation																				
Special Education																				
Vocational Education																				
Bilingual/ESL																				
Comp Ed./Chapter 1																				
Migrant																				
Assessment																				
Other Systems:																				

4) The matrix on the next page is similar to the one presented in Question 3. Column 1 is identical on both matrices.

In Column 2, indicate how many times a year the data for the student record system are collected from the LEAs. If data are updated constantly or as needed, please note this.

Column 3 requests information about the use of the state-level student record systems in your state. "Federal Reporting" means that the student record system is being maintained primarily as a mechanism for satisfying Federal reporting requirements. The "Program Evaluation" subcolumn indicates the student record system is used to assist in evaluating the effectiveness of a particular program (e.g. a vocational education tracking system). The "Accountability" subcolumn is for situations where the student record system is used to measure the performance of the education system. In this column there is an "Other" category since it is likely that uses of the system will be more diverse than the three listed. For cases where an "Other" cell is checked, please describe the use of the system that is being cited.

In Column 4, indicate how data are exchanged. There are five subcolumns entitled, "Paper Forms," "Diskette," Data Tape," "Electronic," and "Other." "Paper Forms" means that a paper document is filled out and sent to the state officials responsible for the system. The "Diskette" cell would be checked if the information is entered on a diskette which is sent to the site where the student record system is managed. The "Data Tape" subcolumn is used when information is entered on a magnetic tape and the tape is sent to the appropriate site. "Electronic" means that the information is transmitted by telecommunication (e.g. with a modem). Again, there is an "Other" column for whatever other situations might exist that are not covered by the columns mentioned. If you check the cell, please describe the particular circumstances on a separate page. Please check all that are relevant.

In Column 5, indicate the technology used in the system. The subcolumns are "Mainframe" for a mainframe computer, "Mini" for a minicomputer, and "Micro" for a microcomputer (a.k.a. a personal computer). There is an "Other" column if there is technology used in the system that does not fit the categories presented. If you use a mix of these categories (e.g. information is entered into a PC and then downloaded into a mainframe), check more that one cell and briefly explain it on a separate sheet of paper.

In Column 6, please provide the approximate cost of the student record system. The first subcolumn asks for the cost of implementing the system (the initial cost of materials, labor, and training) and the second subcolumn asks for the annual cost of maintaining the system. In other words, how much does the system cost in a year to operate?

QUESTION 4: OTHER QUESTIONS ABOUT STUDENT RECORD SYSTEMS

Column 1	Column 2	Column 3				Column 4					Column 5				Column 6	
Student Record Systems	Timing and Collection	Use of Student Record Systems				How Data are Exchanged					Describe the Technology Used				Cost of System	
	# Times in Year Collected From LEA's	Federal Reprtng.	Program Eval.	Account-ability	Other*	Paper Forms	Disk-ette	Data Tape	Elec-tronic	Other*	Main-Frame	Mini	Micro	Other*	Implem.	Maint.
Integrated State-Level System																
Independent and Non-Integrated State Level System:																
Attendance																
Scheduling																
Dropouts																
Graduates/Completers																
GED Test Takers																
Free Lunch Eligible																
Transportation																
Special Education																
Vocational Education																
Bilingual/ESL																
Comp Ed./Chapter 1																
Migrant																
Assessment																
Other Systems:																

* Where you checked the "Other" cell, please describe the situation on another piece of paper.

The last two questions are about district level student record systems:

5) Approximately what percentage of districts within your state have:

____% A fully automated system

____% A partially automated system

____% A paper system

6) Approximately what percentage of districts have:

____% A complete set of information available in one student record system

____% Information for each student is kept in different systems but cross-tabulation is possible

____% Information for each student is kept in different systems, but no cross-tabulation is possible.

____% Information is available in only one place, but it is not complete (e.g. only attendance, only race/ethnicity, etc.)

This is the end of the questionnaire. Thank you for your time and effort.

If you have any questions about the survey, you may contact Barbara Clements or Tom Tobin at the Council of Chief State School Officers at (202) 624-7700 until January 17, 1992, and after that date at (202) 408-5505.

APPENDIX C

Interview Protocol

1. Introduction

   1.1 I am [your name here]. I hope that you received the letter of introduction I sent you [last week].

   1.2 The National Education Goals Panel, in conjunction with the Council of Chief State School Officers, is studying the current state of statewide student record systems across the country. We are surveying all 50 states, and talking to leaders in about 15 states in greater detail. We are interested in the development of student record systems, the role they play in the states, what about them works well and what doesn't work well, and the direction they are going in the future. You have been identified as a leader in your state who is knowledgeable about your state's student record system.

   1.3 This interview will take about 45 minutes to an hour.

   1.4 Everything you say will be confidential. I will be taking notes for later use in writing about our findings. Your state will be identified as a participant in the project, but all of the material used in our study will be presented in a way that will not permit the identification of any person who has been interviewed.

   1.5 This study is not an evaluation of how well or badly your state is doing. We are interested primarily in understanding the system in your state and other states, so that we can advise the National Education Goals Panel on current conditions and practices regarding student record systems across the country.

   1.6 It would be a tremendous help to me if you would give permission for me to tape this interview. As I mentioned, everything you say will be kept confidential. May I tape the interview?

   1.7 Before we begin, are there any questions you have about the project?

2. Current Status

2.1 How would you describe the purpose of your state's system? [Why does your state have a system?]

2.2 Could you describe your state's current system? [Probe: what are the specific elements of the system?]

2.3 How would you describe the technology used in your current system?

2.4 Who has responsibility for collecting and maintaining the data? [Probe: does the state maintain the data, or do locals maintain comparable data?]

2.5 How are data exchanged between the state and local districts?

2.6 How are the data in the system used? [Probe: for what purposes? Federal reporting? Funding decisions? Counting completers/dropouts? Improving instruction? Accountability?]]

2.7 Who has access to the data in the system? [Probe: who actually uses it?]

2.8 If you had to put a dollar figure on the annual amount spent on the student record system, what would that figure be? [Probe: is that just for the record system, or does that include the costs of student assessment too? Does it include salaries? Is that the cost to the state education department, or do local districts contribute money also?]

2.9 What is the most important feature of your state's system?

3. History and Development

3.1 We are interested in learning how your state's system came about. How did the system in your state get started? [Probe: where did the desire for a system come from? What information needs was it supposed to meet? Who were the key early players in its development? What did they do?]

3.2 Did local districts play a role in the development of your state's system? Please explain.

3.3 Was there any opposition to the development of the system? Could you tell me about that?

3.4 How long did it take for the system to move from a plan to a reality? What major steps were involved?

3.5 Can you estimate the start-up costs in dollars of the system, including salaries? [Probe: over how long a period of time?]

3.6 How well-developed is your system at this time, as you see it? [Would you describe it as mature, or as just beginning?]

4. Key Personnel

4.1 In most states, there are many people who have leadership roles in the development of a student record system. I'd like to ask you about those people.

4.2 Who are the people in your state who were influential in developing the student record system? What role did they play? [Probe: Do the people who are influential now differ from those in the past?]

4.3 Why do you consider them to be important?

4.4 I'm interested in the ways in which people in your state work together on the student record system. Could you describe your working relationship with these people you have mentioned?

4.5 Are there any other people with whom you work on the student record system who you consider to be essential to the functioning or further development of the system?

5. Future Plans

5.1 What kinds of activities are planned for the student record system over the next three to five years? [Probe: why will these activities be undertaken?]

5.2 What are the timelines for those activities?

5.3 What kinds of resources will be necessary to do those things? [Probe: how much will it cost? Where will the money come from?]

5.4 [Probe: if nothing new is planned, please explain why. What are the obstacles to new activity? What would it take to provoke new activity?]

6. Lessons Learned

6.1 How would you rate the usefulness of your state's student record system?

6.2 What would you say is the best feature of your state's system?

6.3 What features does your system lack that you wish it had?

6.4 If you were in charge of developing your state system, and you could do it over again, what would you do differently?

6.5 If a colleague from another state came to you and said, "My state has decided to create a statewide student record system. Can you give me any advice about how to go about it" what would you say?

6.6 Can you think of anything else that I should know about your state's student record system that would be helpful in advising the National Education Goals Panel on current practices?

7. Exit

7.1 Thank you very much. Your comments have been very helpful. If I should need additional information, or if I need further clarification, may I call you again?

APPENDIX D
SUMMARY OF MATRICES IN
THE QUESTIONNAIRE ON STUDENT RECORD SYSTEMS

	AL	AK	AZ	AR	CA	CO	CT	DE	FL	GA	HI	ID	IL
INTEGRATED SYSTEM									X		X		
Attendance												X	
Scheduling													
Dropouts		X	X										
Graduates/Completers			X										
GED Test Takers						X	X						
Free Lunch Eligible													
Transportation													
Special Education	X		X			X	X					X	X
Vocational Education	X					X							X
Bilingual/ESL		X											X
Comp Ed./Chapter 1													X
Migrant		X				X						X	X
Assessment		X					X						X
Other Systems:													

	IN	IA	KS	KY	LA	ME	MD	MA	MI	MN	MS	MO	MT
INTEGRATED SYSTEM										X			
Attendance				X			X			X			
Scheduling				X			X						
Dropouts				X			X			X		X	
Graduates/Completers				X			X			X			
GED Test Takers			X	X							X		X
Free Lunch Eligible				X			X						
Transportation				X			X						
Special Education			X	X	X		X		X	X	X		X
Vocational Education				X		X	X				X		
Bilingual/ESL				X			X			X			
Comp Ed./Chapter 1			X	X			X						
Migrant			X	X			X						X
Assessment			X	X	X		X				X		
Other Systems:				X									

APPENDIX D
SUMMARY OF MATRICES IN
THE QUESTIONNAIRE ON STUDENT RECORD SYSTEMS

	NE	NV	NH	NJ	NM	NY	NC	ND	OH	OK	OR	PA
INTEGRATED SYSTEM		X				X	X		X			
Attendance		X					X					
Scheduling		X					X					
Dropouts		X		X			X			X	X	
Graduates/Completers		X		X			X					
GED Test Takers	X	X		X			X			X	X	X
Free Lunch Eligible		X								X		
Transportation		X					X					X
Special Education	X	X	X				X	X		X	X	X
Vocational Education		X		X			X			X	X	X
Bilingual/ESL	X	X					X					
Comp Ed./Chapter 1	X	X					X					X
Migrant	X	X		X			X			X	X	X
Assessment		X		X			X				X	
Other Systems:												X

	RI	SC	SD	TN	TX	UT	VT	VA	WA	WV	WI	WY
INTEGRATED SYSTEM					X					X		X
Attendance						X						
Scheduling						X						
Dropouts		X				X						
Graduates/Completers		X				X			X			
GED Test Takers	X	X				X	X	X				X
Free Lunch Eligible						X						
Transportation												
Special Education	X		X			X	X	X			X	X
Vocational Education	X						X	X			X	
Bilingual/ESL	X	X										
Comp Ed./Chapter 1						X						X
Migrant							X					
Assessment		X				X		X			X	
Other Systems:												

Figure 1

Current Status of State Level Student Record Systems, 1992

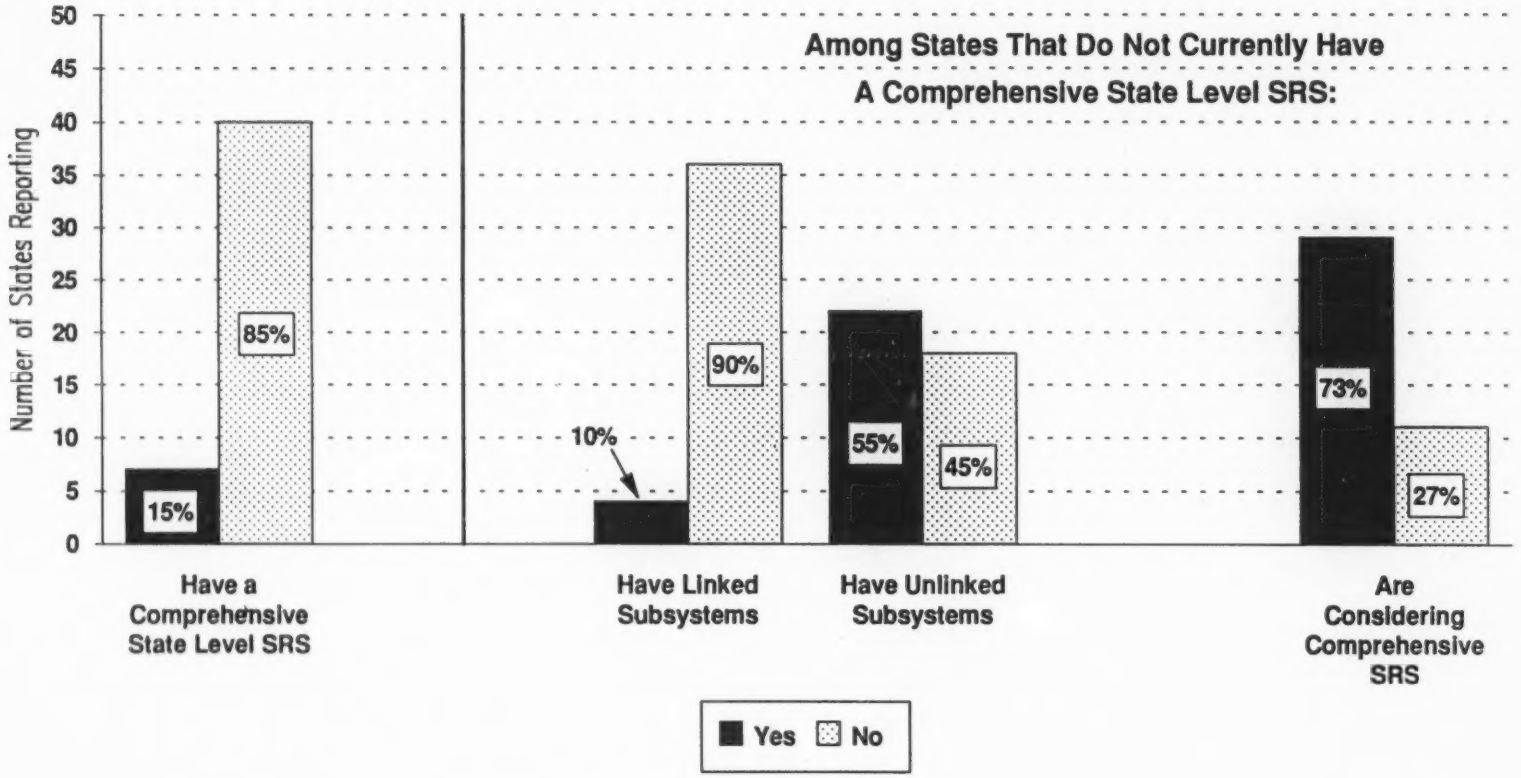


Figure 2

Percentage of States Without a Comprehensive SRS that Maintain Various Student Record Subsystems

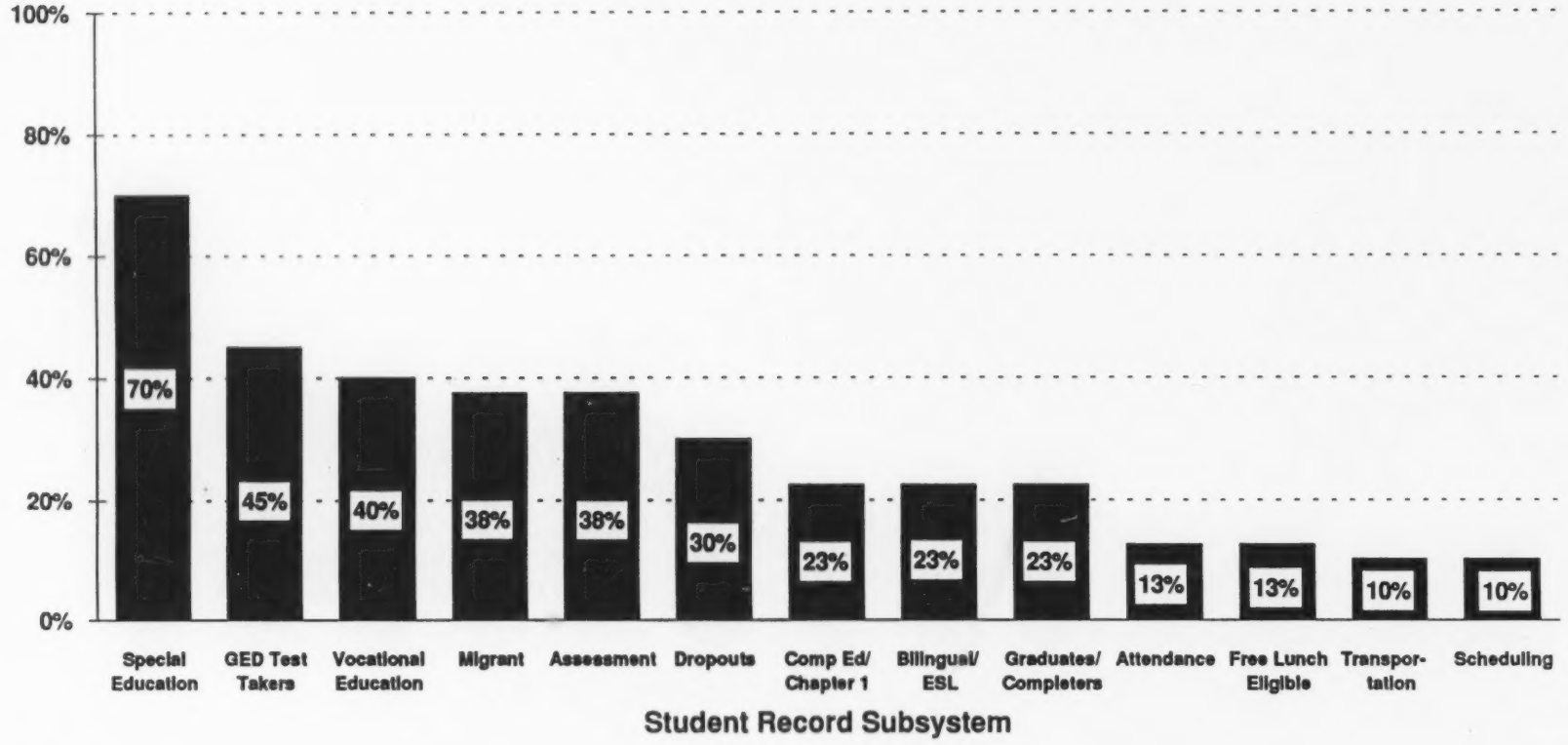


Figure 3

Total Number of Public K-12 Students, by State (in Hundred Thousands)

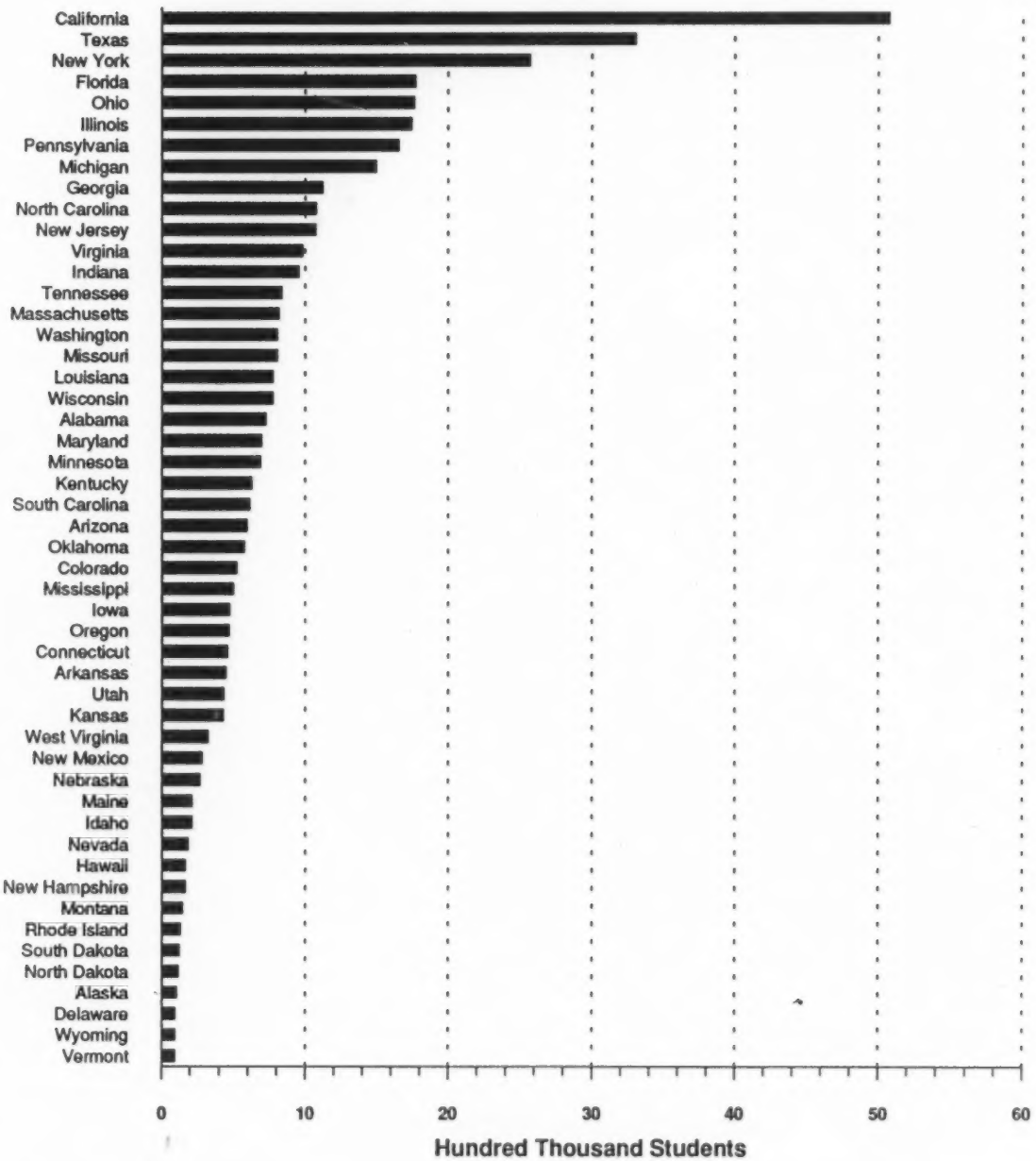
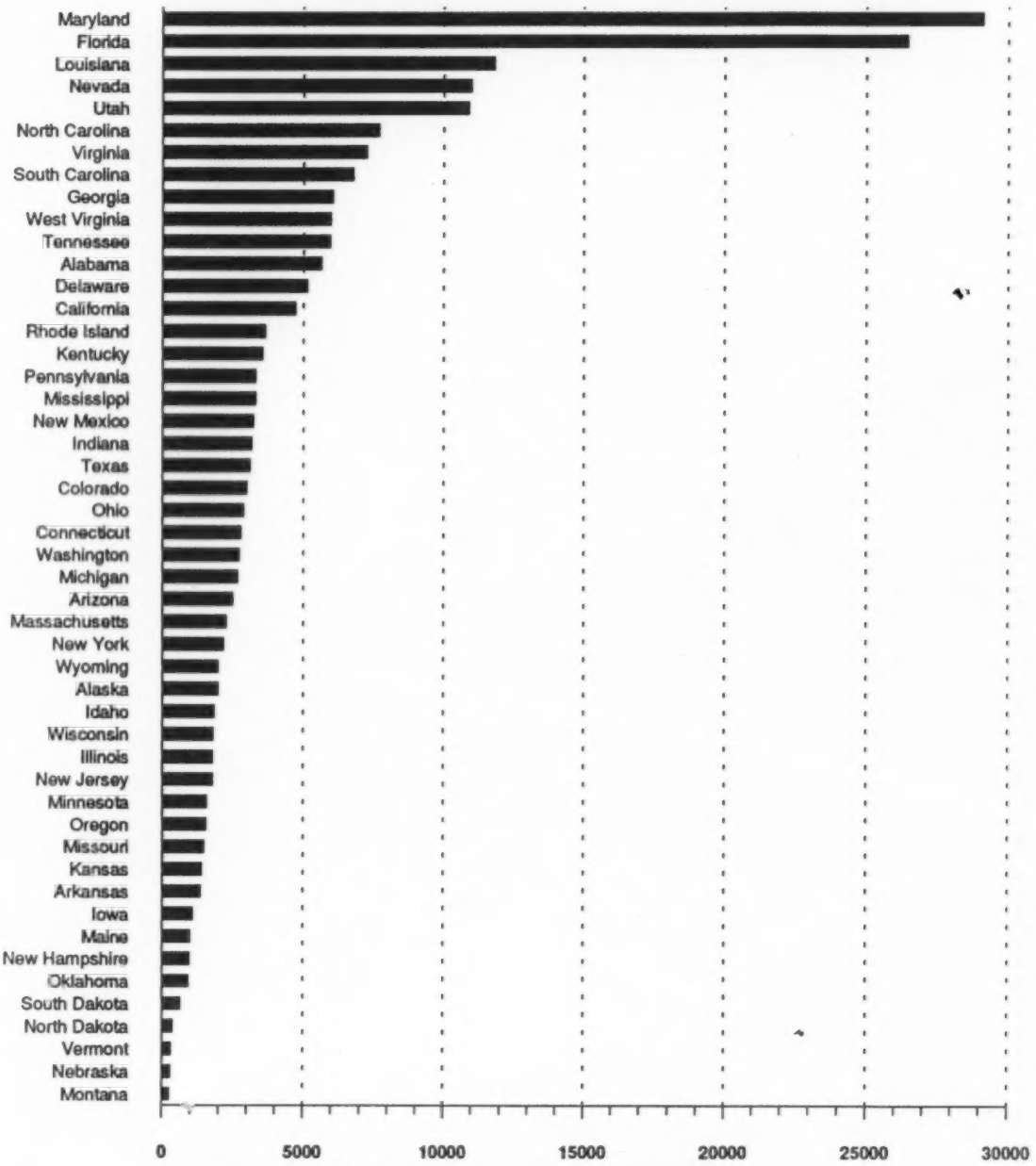


Figure 4

Average Number of Students per School District, by State*



*Note: Hawaii has a single school district of more than 160,000 students

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